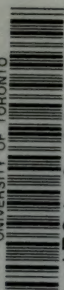
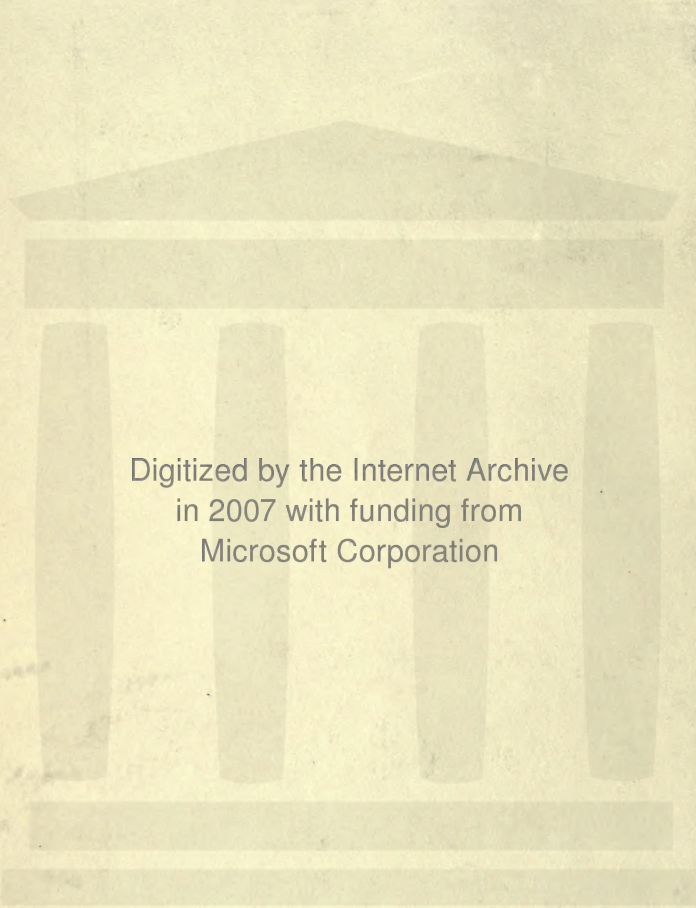


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FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE

BUFFALO, NEW YORK, U. S. A.
AUGUST 25-30, 1913

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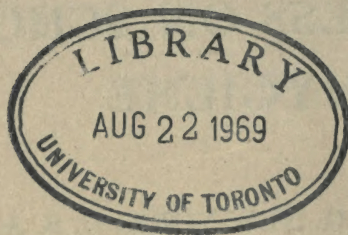
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VOLUME IV



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SESSION SEVENTEEN

Room B.

Friday, August 29th, 2:00 P.M.

SCHOOL HYGIENE IN RELATION TO THE HOME AND THE COMMUNITY (Part One)

G. STANLEY HALL, Ph.D., LL.D., *Chairman*

HENRY W. SPRAGUE, Buffalo, N. Y., *Vice-Chairman*

Program of Session Seventeen

G. STANLEY HALL, Ph.D., LL.D., President of Clark University, Worcester, Mass. "Sex Hygiene in Infantile and Prepubertal Life."

MAUDE BENJAMIN, Commissioner of Schools, Livingston County, Flowerville, Mich. "The Hygiene of the Community."

B. LIBER, M.D., New York City. "School Hygiene and the Home."

L. T. ROYSTER, M.D., Member of Norfolk School Board and State Board of Health, Va. "The School Child in Its Relation to Eugenics."

CHARLES W. HARGITT, Ph.D., Sc.D., Professor of Zoölogy, Syracuse University, N. Y. "Vital Statistics in Relation to School Hygiene."

FRANKLIN C. GRAM, M.D., Board of Health, Buffalo, N. Y. "The School and Vital Statistics."

Paper Presented in Absentia in Session Seventeen

(Read by Title)

LEWIS M. TERMAN, Associate Professor of Education, Stanford University, Cal. "The Sleep of School Children; Its Distribution According to Age and Its Relation to Physical and Mental Efficiency."

SEX HYGIENE IN INFANTILE AND PRE-PUBERTAL LIFE

BY

G. STANLEY HALL

It has usually been thought that the life of sex began at puberty and that the preceding stages were normally sexless, although we have many cases where puberty begins in very tender years, although this is pathological. It is now known that the *vita sexualis* is a psychophysic complex with very many components, and that some of the most important of these appear normally in isolation from one another and from the sex zones in the very earliest period of life, and that these various elements are unified and assume their characteristic traits at puberty. These elements, thanks to recent analytic studies, are now more or less separated out from the whole, and can be studied in isolation. Their importance in predetermining the *vita sexualis* later is very great, and what is more to the point, they can be more or less controlled by judicious insight and regimen. All that I propose to do in this paper is to briefly characterize the most important of these as follows:

1. The first is particularly connected with the rubber nipple, especially when it is used as a placebo, with perhaps a cork in the end so that the manipulation of it in the infant's mouth brings no food. This has sprung into sudden and almost amazing prominence as a source of a very specific danger. The child too accustomed to this tends to develop a habit of more or less persistent and at periods excited sucking, with phenomena designated in German as *Lutschen* and *Ludeln*. The infant has a period of sucking with a crescendo excitement, perhaps with flushing and phenomena akin to those of second breath, which makes for an erectile habit in general and tends to create an unstable, erethic disposition, which may lie dormant for years but to which any adolescent impairment of health strikes back its roots and finds strong reinforcement. Thus is laid the foundation for passionate hysterical impulsions, which may later defy normal control, and without specific neuroses or psychoses this habit seems to constitute one of the chief predispositions toward self-abuse later. Just why it is that this habit has this effect, or just how it acts thus, cannot yet be expressed in terms of centers or association between them. Of course it intensifies and also expresses general irritability. It means dissociation between

the act that normally brings real nutritive experience and this experience itself. It arouses without normal satisfaction, and this seems to serve as an *Anlage* or a resemblance which we can call at present an analogy between sex sensations and their normal culmination. Whether artificial feeding itself is fraught with a less degree of the same danger opinions differ. Of course for the suckling the mother is almost in the place of God, for it feels toward her the same sentiment of absolute dependence which later turned toward the divine makes religion, turned towards Nature makes the scientist's devotion to it, toward the moral law within, the philosopher. It shows that those who love good mothers who feed them best are more likely to be reverent, to love Nature, life and virtue. The infant remains almost as before birth, consubstantial with the mother in body and soul. Not only is the child normally nursed about four times as likely to live through the critical first year of life, but if the mother cares for and handles it herself she is thereby laying the basis for docility and tractability. Deviations from this norm, of course, predispose to ailments and checks of the developmental impulse which may be obvious or very subtle and imperceptible. Normality here, then, means predisposition to correct reproductive habits, so closely akin and sympathetic are the processes that serve for the assimilation of food and those that serve for the conservation of the race. Normal diet, then, and methods of feeding, are among the very best safeguards against sex errors later.

2. Abnormalities at both the lower ends of the alimentary tract in infants are also found to be sometimes almost fateful for later sex development in ways hitherto unsuspected. All normal infants pass through more or less prolonged periods of interest in excremental activities. This recapitulates an interesting though disgusting set of scatological customs in the races, which Bourke has amplified in his *Scatologic Rites*. It is a legitimate expression of curiosity and an element of self-knowledge. The child's interest in both fluid and solid excreta and in the processes of their elimination, and perhaps even still more the instinctive tendency, especially of nervous children, not only to observe, peep, and to experiment but to control the latter, which may sometimes be highly developed in nervous children, if excessive or prolonged tends also to lay the foundation for certain nameless perverse proclivities and for sex inversion among others, long familiar to medicine but never before known to be connected with these infantile interests. On the other hand, if these tendencies, particularly the latter, are too prematurely or strongly repressed by applying adult standards of modesty and shame, the soul tends to react into over-fastidiousness, scrupulosity, misophobia, morbid cleanliness or fears of contagion, etc. Thus the compensatory

or corrective agencies may be over-worked and the power of voluntary retention or constipation may be over-developed, while the checks of enuresis, as Adler has shown in scores of cases, may bring out phenomena both of excess and defect which constitute some of the most essential traits of the psychopathic constitution. Here at the anal and urethral end of the alimentary canal we find another deep tap root of man's tendency toward certain perversities, which may profoundly affect the relations of the child to the functions that conserve the race. On the other hand, by establishing regularity and normality of excremental habits and by gratifying but not inflaming the child's natural lust for knowledge here, as many obscenities do, we can erect thus early efficient barriers against a troupe of bad traits and even diseases later. Of course errors here have other results, but I am speaking only of those known to be connected with the life of sex.

3. It is usually assumed that infants during the first triennium of life are immune from the effects of things sexual in their environment, so that almost anything can be said or even done in their presence without danger of leaving any trace upon the conscious or subconscious psyche. Recent studies, however, show the limitations if not the falsity of this view. A single illustration must suffice. An infant of two and a half was laid, awake, on a rug after it had retired while its bed was being remade, in the process of which the maid stepped over it once or twice. In later life it recalled this experience with great vividness on account of the momentary suffocation as the dress of the bed-maker hung over its face. From this time on the child could not tolerate this girl, and from this nucleus developed an aversion for all girls, which grew intense until well after puberty. In collections of first memories which young people have of their infancy it is found that events which are sexual, though not known to be such by children, have a strange predominance not only in number but in vividness, and from voluminous data of this kind and from results of psychoanalysis it seems pretty well established that exposure to sex phenomena and events in very tender years leaves often a mark upon the soul, perhaps of almost traumatic intensity, and that these experiences may be the centers of reversion and fixation, or be both reproduced and intensified and become important genetic factors in symptoms of disease. The indication, therefore, is that there should be reserves here, and that children of two, three and four, who very often grossly misinterpret what they see and hear, perhaps as assaults and defense, are profoundly affected in ways that parents should heed. This new insight into the formative factors of the infant soul has its own obvious suggestions for early sex instruction.

4. To the girl of plus or minus three her father is or should be the ideal of his sex, as to the boy of three the mother should be of hers. This feeling is the bud of that which each will years later feel toward someone of the opposite sex. Sex love begins to burgeon toward the parent, who is its first object, and home is its sprouting garden, before transplantation occurs. Occasionally we see infantile fancies, if the parent of the same sex is away or dead, that the child takes the vacant place as she or he understands it. The boy is the little play-husband of his mother, the girl the make-believe wife of her father. Thus in very early years each parent is beginning to shape the pattern and ideal of the child toward the other sex, and we have abundant instances of the effect of too prolonged or intense love of boys for their mothers, and still more of girls for their fathers. The latter in particular may be prone to direct so much of their affection toward their father and to continue to do so so far on in their lives, that as they approach maturity they grow a trifle, if unconsciously, jealous of their own mothers, or less rarely, boys of their own fathers. Thus even parental love, normal and beautiful as it is, has its dangers and limitations. The stronger and the longer this continues, the more probable it is that each when they marry can be happy only with a mate made body, soul, or both, in the image of the favorite parent. The father especially may unwittingly so stamp his image upon his daughter's soul that wedded happiness with a man of a totally different type would be impossible, while the mother may be the unconscious model which her son seeks to copy in rejuvenated form in his bride. Now, too much of this is clearly not in the interests of eugenics. The very nature of love means supplementation, complement, and the need and law of this strikes its roots deep down and into the principles of cross-fertilization. The physical, hygienic, moral faults of the parent should be avoided, not duplicated. Thus we have new reasons for urging that each parent should realize that their personality has very much, but must not have too much, to do with determining the kind of partner their child of the other sex will later take. Their virtues and not their frailties should be sought in the future mates of the children. They should strive to live up to all they would wish these mates to be, and this gives a new and higher function to parenthood. Each should avoid beyond a certain stage in life an intimacy so close or prolonged that the child when nubile or even post-nubile finds it too hard to turn affection to a mate at all, or at least finds the range of selection narrowed. Error here brings only domestic tragedy and pathos, as is seen in many cases all about us, not a few of which end in courts or asylums, for when the powers of adjustment to different personalities are too limited, as they are especially prone to become where there are neurotic traits, misfits doubtless

do help to torture the very stirp itself out of existence, and this, though it may be on the whole for the interests of the race, is cruel to the individual. Cases of this type are numerous in psychiatry and are now beginning to find their way into current drama and romance. Of these the very best parents of children of adolescent, and still more as they approach marriageable age, need to take most heed. This principle is of even wider application. The presence of or acquaintance with older people of the other sex falls well within the range of this comprehensive law. Good typical men and women teachers and friends are very essential in moulding in young people of the other sex those ideals which are always growing in the deeper regions of the soul, and which spring up and take control in the phenomenon known as falling in love.

5. Every man should be just as manly and every woman just as womanly as possible. It is vital for the race that sex distinctions, which primitive and savage life often rather tends to obscure, should be pushed to their uttermost. The highly civilized woman and man differ more and more from each other in bodily dimensions, in life occupation, in mental, moral, social traits. Now we find that infant nature falls into two great types which may be roughly dubbed the aggressive and the passive. Some instinctively submit, obey, accept and revere authority, tend to acquiescence, are keenly sympathetic, altruistic, philanthropic; while others are no less instinctively independent, obstinate, revolvers against authority, prone to attack, fight, perhaps become bullies, indulge in cruelty. Now this distinction does not entirely coincide with that between the nature of boys and that of girls, for, as Schopenhauer long ago said, some boys seem to have girls' and some girls seem to have boys' souls. Moreover, there are, of course, all gradations between these extreme types. Dispositions also may change with age, especially at puberty, and finally, all are aggressivists and passivists in other ways, so that it is a question of preponderance. Those who are activists to excess, if their energy breaks through the restraints of law, commit crimes of violence, or if their energy is tempered and directed they do the great deeds of the world, become heroes, pioneers, discoverers, leaders, inventors, while passivists to excess become the led, subjects, henchmen, place-hunters and not place-makers, slaves, sycophants, victims of others, cowards. They are weaklings, and if they become active criminals it is because they are led into it. Their crimes are more instinctively of the vice type, for they lack will power or initiative. The better of them may learn well, they may become faithful executives of others' wills, may make excellent clerks, or even great scholars, but they are so passively and not creatively. Toward the other sex this type are submissive, in family life become

subjected while the others are masters; they constrain, subdue by force. It is in the realm of sex life that these distinctions culminate and perhaps have their root, and it is during the first three years of life that this fundamental difference in disposition can be very greatly modified, and tendencies to excess both ways be corrected unless, of course, neurotic heredity is too strong. This can be done chiefly by disciplining the fear that flies and the anger that assaults, by training both to fear and be angry aright, by cultivating at the same time the power of sympathy and the power of suspending it in the interests of the larger good. We have here to deal with what the German physicians call *Angst* (a larger term than our "anxiety," for it covers about all the mental and neural troubles of the passive order). Some of this *Angst* must be drained off in the specific forms of fear, with wholesome types of punishment, while aggressiveness culminating in outbreaks of the positive type must be changed from petty irritability to greater outbreaks against real evils and deeds. All this can be done to an extent greater than has hitherto been supposed by very early application of processes known as repression, vicariousness, and sublimation, which are for the most part simple operations almost instinctive with really insightful and devoted parents. The weakling must be roused from his apathy, and every germ of possibility of *élan* and enterprise, venture, courage, boldness, must be quickened. Some need the training of fear, some that of anger. This is a theme too intricate to enter here in detail, but it is much to know that so fundamental a diathesis can be changed, if taken in its nascent period, to a degree undreamed of before and impossible later.

There are other new and practical suggestions for the hygiene of the instinctive and emotional life, but it is a great and new ideal that by beginning early and by careful study of the soul of the very young we can apply formative influences to the very roots of character. We must not, as our educational system has so persistently done, forget the fundamental law that the basal traits of human nature appear first, and that of all traits it can be said that the later they appear the more accessory and less fundamental they are. We do not need to accept the extreme theories of Freudians, who see sex everywhere and in everything, but mental hygiene accepts with all appreciation the new insights that sex is not the specific physical thing it has been thought, but that it is larger, higher, and is now known to underlie very many traits and activities far outside the narrow range we had hitherto given it.

THE HYGIENE OF THE COMMUNITY

BY

MAUDE BENJAMIN

In the laying out of any community there are at least three prominent factors to enter into it for healthy conditions. First there must be wide streets with frequent cross streets and also ample space about the buildings, so as to provide the free circulation of air. That the internal arrangements of the individual buildings shall be such as will conduce to their efficient ventilation and to the purity of air inside them. That the administration of the town or city shall be such as to ensure the unstinted supply of pure and wholesome water, the effectual removal of all sewage and liquid refuse and the regular and thorough scavenging and removal of waste. These three conditions are requisite wherever a few dwellings are clustered together.

Every individual who is a home maker should next see to it that the dwelling comprises the following five conditions: 1st. A site dry and not malarious, and aspect which gives light and cheerfulness. 2nd A ventilation which carries off all respiratory impurities. 3rd. A system of immediate and perfect sewage removal which shall render it impossible that the air shall be contaminated from excreta. 4th. A pure supply and removal of water by means of which perfect cleanliness of all parts of the house can be insured. 5th. A construction of house which shall insure perfect dryness of the foundations, walls and roof.

In the application of sanitary measures to any community, perhaps the first item to be considered is the cleanliness of the dwelling. More attention has been given in this branch of sanitation than in any other by certain housewives. The Dutch housewives for centuries have been proverbial. One may visit almost any rural community in the New England States and be impressed with the degree of anxiety shown by the housewives for the removal of dust and the sweeping of rooms. The semi-annual "house-cleaning" is almost a religious ceremony. It would no doubt be unfair to remark that the degree of attention given to this branch of sanitation is out of all proportion to its importance and that the very home in which it is exercised to the highest degree may be drinking polluted water and may possess unsanitary methods for the disposal of sewage, drainage and household waste and is very likely to have a large manure pile within easy distance of the kitchen. It is a fact that these external conditions have only come to be recognized as important factors to the health of the household in comparatively recent years.

If one household duty above another needs special attention it is the washing of dishes and other utensils used in the kitchen and dining-room. The transmission of the bacteria inhabiting the nose and mouth and throat and lungs and such bacteria as may be clinging to the hands and fingers is particularly easy by means of the kitchen and tableware. The handling which such implements receive during the family meal is one which readily conveys any personal infections to their surfaces. It is a common thing for knives and forks used by a person infected with tuberculosis at one meal to be used by some other person at the next meal, and in this way serious chances of infection may occur. Consequently the washing and sterilizing of the implements is a most important matter. Soaps which do not dissolve grease or remove clinging matter are used instead of solutions of soda. The use of one pan of water unchanged, or infrequently changed is common rather than several pans of water frequently changed so that all utensils shall receive a thoroughly clean rinsing. Sour dish cloths are often used for which might be submitted brushes. Final scalding with boiling hot water is too often omitted. By the use of brushes, solutions of soda, a thoroughly clean rinsing and finally scalding water, dishes and tableware can be washed and sterilized to that they stand no chance of conveying infection from person to person.

It will be observed that in these conditions purity of air, and in that purity must be included cleanliness, which is the fundamental principle aimed at. Notwithstanding the apparent simplicity of these principles, and the obviousness of the necessity for each and all of them it is unfortunately rare to find, even in the present day, a dwelling in which due attention has been paid to them. In the past, neglect of these principles has led to plague and pestilence to an extent which it is difficult for us to appreciate, and, were similar neglect to exist now, when the population is so far more numerous and dense than formerly, who can conjecture to what magnitude the disastrous results of such neglect might attain.

The tracing of the development of hygiene from remote times to the present gives us the true measure of the culture of the people.

Sanitation is man's best defense against his surroundings. Disease and death have become recognized as due in a large sense to the influence of the external world upon him.

By sanitation the numerous avenues by which bacteria are accustomed to travel to produce their outbreaks of disease are being closed up, their resting places are being destroyed, and the original sources of infection are being discovered. The principles involved in the sanitation of small communities differ in no respect from those of sanitary science in general. The gathering together of men into large cities or

small towns or isolated dwellings modifies only the method of applying these principles.

Statistics prove that impure air is one of the most important of the causes of death which is always present. Density of population favors the spread of organic impurity in the atmosphere, consequent on dirt, overcrowding and poverty, and this unfortunately is the normal condition of populous and manufacturing towns. The same has been observed of animals, the health of the animal being in direct proportion to the purity of the air they breathe.

A variety of substances are continually passing from the surfaces of the earth into the atmosphere in the condition of gases, vapors and solid particles; these accumulate and render the air irrespirable if their effects were not counteracted by the forces of nature which are continually at work in one way or another. Diffusion, dilution by wind, oxidation and the fall of rain are the chief purifying agents, while the processes going on in the vegetable world diminish the amount of carbon dioxide evolved and keep it within certain limits; gases diffuse and are rapidly diluted and dispersed by winds so as to be rendered innocuous. Every home no matter how small its yard space can be provided with porch boxes which will greatly assist in this great work. It is only in the air of enclosed spaces when the natural processes of purification are arrested, that any great deviation from normal standard occurs. Hence the necessity of the members of each community being thoroughly instructed in regard to the evil effects of poorly ventilated buildings, where people are congregated together whether in home, factory or school.

Bathing, another defense, is as old as the hills; we find evidence of it far back in history and at the present day savage tribes often attach great importance to the curative effects of water.

The belief in the healing efficacy of water is sometimes so strong that it becomes a religious belief. In fact, in the 18th century the chief interest in baths was seen in Italy, and one historian of the period states that all Italy is crazy on the subject of cold water. I feel safe to say if all the population of these broad United States could be made to feel the importance of the bath we could greatly reduce the morbidity.

The only hope for every land from sea to sea is more effective teaching. It is unfortunately true that the teacher has not yet learned the art of publicity.

Children constitute an invaluable medium for spreading knowledge that has been put before them so as to make a real and genuine appeal. From my knowledge of child life, I feel sure if this subject of community hygiene could be so put to the child that he could take it to the home there would be a great change for the betterment of each community.

With so many mothers forced into the factories to help earn the daily bread it seems to me there is but one way by which this wider and fuller knowledge of hygiene must be brought about and that is through the public school and until this knowledge of proper conditions for the health of the individual and the race has become a part of the warp and woof of human conviction, legislation will fail to take action; but when it becomes backed by public opinion it will be effectively enforced. A study of the expenditure of local and general government shows that far more is spent in meeting the evils of crime, poverty and disease than is spent to aid the agencies which work for the elimination of these foes of human society. It is not without reason that one hopes in the near future the people will employ the doctor to keep them well rather than to heal them when they get sick and that the civilized state will spend five or six times the amount for conservation, for improvement than it spends for remedies, and thus reverse the present program.

One discovers in this movement for physical well being a common current wherein the representatives of all the manifold phases of education may meet. The laws of the human body are fixed and fundamental. The methods whereby children and youth are taught and trained to observe these laws must be essentially the same. As our scientific knowledge grows, then we are going to have an increasing body of common practice followed by all schools, and thus establish a universal basis for publication in health.

Education in this country has become practically universal in the sense that nearly everybody receives some education; but our schools have not yet fully grasped their threefold task; first, education to skill in work and joy in work; secondly, education to readiness of service, consideration for others and loyalty to school fellows and to the school and thirdly, education into the state community. It is more important that the high school teach boys and girls to care for their health, to think, to face real problems, to acquire alertness and initiative, and to attain to a thorough knowledge of fundamental objects and a capacity for hard work than it is for it to teach certain subjects.

Sufficient data is now at hand to make possible a quantitative measure of the results of such teaching and training, both on the economic and on the social side. If it is found that the attention to the physical conditions of the child diminishes the percentage of retardation, if contagious diseases are checked, if certain diseases are banished from mankind, if the length of human life is increased, if economic efficiency is multiplied then these results will show a definite money value to society from better school methods.

The social values are also easily determined. Men and women who are well are more congenial, co-operative, more effective, are happier,

are more disposed to join in common work of betterment of conditions in the state and nation.

An efficient democracy demands that the leader of education should give heed to this primeal consideration of health as the basis for all effective work.

The great problem confronting the American people to-day is to be able to retain their acquired health, strength, and power under the conditions imposed upon them by modern progress.

The most important of all sanitary considerations in connection with any community is the matter of education. The people themselves must be informed concerning the progress of sanitary science and how to follow a system of clean living, if they are to gain the benefits which are to be derived from sanitary knowledge. This cannot be done by the old system of teaching physiology and hygiene and nature study. There is a movement on foot at the present time to bring about this kind of sanitary instruction in the public schools. It has been delayed first on the part of the ignorance and indifference of the teachers. The first step then towards an advance is an education on the part of the teacher along this line. Next to the school, is the county and state boards of health. These two can play a very important part in the education by the regular publication and distribution of bulletins on public health matter in order to get this before the minds of the people. It is hoped by all the great thinkers of the present day, that public sentiment on matters of sanitation and of general health will in the course of time reach the same degree of interest that is being displayed in the study of agriculture. It does not seem unfair to suggest to the public authorities that at least as much money should be spent in instructing the public how to raise their own children and to protect themselves against infectious diseases as is now expended in informing the public how to raise pigs and how to breed horses and cattle.

The chief aim of sanitation has ever been and ever will be the securing for the masses of the people the two chief necessities of life—pure air to breathe, pure water to drink. This can not be done, however without the coöperation of every member of the community. The great thing to be instilled in the minds of each is that no man lives unto himself alone; but that he is his brother's keeper. If he fails to keep his own surroundings clean, he is not only endangering himself but the whole community in which he resides. The cultivation of sanitary tastes which will enable us instinctively to avoid unclean air, doubtful food, and dirty paths is as much a duty as the cultivation of a taste for beauty in form and color.

SCHOOL HYGIENE AND THE HOME

BY

B. LIBER

I am a physician of the workingmen of the East Side of New York, whose life I know exactly and for whom I am editing a health magazine. And I will speak here as a physician, although I can see the question of school hygiene as a teacher as well, having been one for years.

As my paper must be short, I will be able only to mention a few points which will show, *First*, what the influence of school hygiene upon the home is now, and *Second*, what it should be.

I know that not many of you will agree with me that the public school as it is to-day in all civilized countries is one of the strongest causes of reaction. Real progress of the human race does not mean—and should not mean—the advancement of knowledge or of technical skill only; it means principally the larger possibilities for the development of the individual, a greater respect for his freedom, for his will. In this sense the public school is reactionary; it does not respect the individuality of the child, it adapts the child to a prearranged program, it inspires him with the idea that all things are well as they are to-day, it wipes out the intellectual and characteristic differences between the children it interferes with their discovering knowledge, by offering it to them ready made, when not asked for.

The ideas on hygiene which the child gains in school are given to him in the same manner as the other teachings; but with the difference that while the teachers know very well the other objects, they know nothing or little of hygiene or, which is worse, they are imbued with wrong and superstitious ideas and rules on hygiene.

What does the child learn in school in regards to hygiene?

Anatomy and physiology of the human body are considered among the less important objects; that is why most of the people know anything better than their own organs. And the little they do learn of anatomy being taught by the usual bad methods, is very soon forgotten. But the worst part yet is that in this teaching, the most vital organs of the body are entirely ignored. Take an elementary book on anatomy and physiology, and you will find that the sexual organs are suppressed, as if they would not exist. And you know what it means not to say the whole truth!

The child of the East Side, the tenement child, more than any other, needs good air; the conditions under which he lives, the congestion in

his rooms, in the tenement and in the whole block, the ignorance of his parents and surrounding people (which they share with other classes of society) concerning the necessity of air, all these are causes of many children's diseases. The school ought to be the source from which light on such matters should be spread all over; and light and knowledge are not propagated by words only; deeds are necessary. It is not sufficient to say that we need fresh air, the teachers must show the example, which is impossible with most of them, they being very little convinced of that and believing more in the old superstition of "catching cold," than in the necessity of fresh air and not even dreaming that most of the so-called "catching-cold diseases" are caused by the lack of fresh air. The ignorance of the teachers explains why the windows of the class-rooms are almost always tightly closed during the winter and rarely frankly open in the spring and fall. Of course, many rely upon the modern ventilation system usually prevailing in the school building; but we know to-day that the artificial ventilation gives us unnatural and bad, because warmed up air, that it can never replace the out-door air and that the best ventilation is the open window.

One of the most disastrous things in life, one of those things that often cause disease or make disease worse and so cause death, is the irrational fear of disease. The teacher is often guilty of helping to inculcate that fear into the child's mind as if he has not enough of this poison at home.

I have known many children who have brought home from school the exaggerated fear of microbes, which, the parents helping, has grown in them to be almost a disease in itself, the microphobia. This is possible only because the teachers themselves suffer from this "scientific" superstition.

I have mentioned the incompleteness or, better said, the adulteration of the school books on the subject of anatomy in regards to the sexual organs; but this is only a part of the *whole system* of ignoring the sexual life; it is but one of the schemes by which our crooked Home and School Education plays the ostrich game, avoiding the so-called difficulty to teach sexual hygiene, by ignoring the function of the sex organs. I know that about this subject there has been some discussion here, but there is never too much of it.

If they do not learn the truth about sex life, if their legitimate and innocent questions about it are not answered in school, there is one thing which many children of both sexes do learn there, that is masturbation, which is one of the worst defects in intimate life and which accompanies them for many years, making of them unhappy sexual neurasthenics in their adult age. I know that some of you will protest against this assertion, but I am convinced of its truth.

It seems ridiculous to compare the enormous and beautiful buildings of the New York public schools with the miserable dwellings called homes of the workmen's children. Still, I dare say that while the tenements are a great source of diseases for all, the public school contributes a tremendous amount of children's diseases in a populous city and that the school is a very important factor in the propagation of the contagious diseases. This is my firm conviction from thousands of facts and instances from life. And this occurrence is not difficult to explain, when one thinks of the crowded classes (oh, too crowded for the moral, intellectual and physical welfare of the children) and when one thinks of the close contact of the pupils for long hours indoors.

The school should be the health center for the children themselves as well as for the adults living in its neighborhood; it should be the center for enlightenment for the whole population, especially in cities with such an heterogeneous element as that of the cities of this country. Generally, the hygienic rules coming from the schools and brought home by the children, have an enormous influence upon the present home life, not to speak of their influence upon the homes of the future men and women. The parents of the present school generation, although few of them learn *all* they could and should from their offspring, do learn many truths from the latter. Although the sanitary conditions are closely related to the economical conditions and only with the suppressing of the social causes of disease, will we remove most of the diseases and create an atmosphere in which men will be healthy and beautiful; still, very much depends on ourselves, on personal knowledge and care of the individual health. Therefore the public school could be of great service in the work for general enlightenment in health questions and could have a large share in the physical improvement of our population.

The remedy? The remedy, as far as the public school is concerned (and this leads me to the second part of my little talk) is to be looked for, according to my opinion in the following measures:

The class rooms should be large and should not contain more than twenty pupils. I know your objection—this will necessitate more teachers and more school buildings, consequently more money. But when we remember how much money is being spent for the armies and navies all over the world, we cannot see why we should be so stingy with our schools.

The classes should be built in such a way that they should almost always be open-air classes and that they should be closed only at a very extreme weather. We need not wait until the children acquire consumption before we give them the benefit of an open-air class!

The schools should have large gardens and yards where the children

should stay as much as possible. Many subjects could be taught outside with proper arrangement.

The teachers should be thoroughly acquainted with modern Hygiene; they should be convinced preachers of the most advanced ideas on Hygiene and should always keep in mind the great influence of their teachings and of their example upon the future life of the scholar and upon the community at large. It is not enough to say to your pupils: "Fresh air is necessary," while in the same time you keep the windows shut tight; it is not enough to say to others, "open the windows," while you do not open them more than an inch. Everybody, nowadays, who claims not to be stupid, has heard of the importance of fresh air and says that his windows are open; but this is only fashion, and from talk to deed there is quite a distance and few are those who believe really and deeply in fresh air, who frankly open doors and windows. Only such teachers in whose flesh and blood has passed the belief of the life-and-health-preserving and of the life-and-health-saving force of fresh air, are worthy of their name and high function. The teacher must be prepared to talk convincingly to his pupils about every part of Hygiene, he must take the place of the parents who are usually too busy earning bread and shelter and who are often too ignorant to educate the child.

A larger place than at present must be given in the curriculum to the knowledge of the organs of the human body. The sexual organs should, of course, be included, as they do belong to our body, whether you like it or not. And woe to those who do not realize their importance and the curse that comes upon us when we neglect them or when we ignore the causes of their diseases! There is nothing unclean to the clean and pure mind. Sexual instruction should be very easy for a teacher who is thoroughly familiar with the sexual facts in the vegetal and animal world and who has succeeded to free himself from the superstitions with which our unclean "morality" has choked the study of the fountain of life. I can talk easily, innocently, and interestingly to any child on sexual life, not answering him more than he wishes to know at the time when he wishes to know it. Give the child the real truth in a beautiful way and he will remain pure; do not wait until he gets the semblance of truth, adulterated, from a polluted source, because, by doing so he will have a dirty mind and later in life he will readily fall a victim to sexual disease or sexual neurasthenia. (It may help the teachers to read the French book on "Sexual Initiation," by G. Bessède, to be purchased at "Art & Science," 6 rue Bréa, Paris. This book is the result of the debates on sexual instruction, held at the Third International Congress on School Hygiene.)

Do not give the child a chance to form bad sexual habits, try to

discover them, if it need be, in collaboration with his parents and talk to him friendly, openly and plainly about the dangers of such habits.

Teach the child all about food, clothes, cleanliness, the importance of water, how to keep healthy and avoid diseases, all about the poison in alcohol. Let it be for him a religion: never to overeat, never to eat without being really hungry, in spite even of his parents' ignorance, who have always a tendency to overfeed him; always to eat plain, natural food; to adapt his clothes more to the temperature than to style. Give him all these instructions in such a way that they should penetrate deeply into his soul; convince him by facts and examples, so that he may bring home the conviction with all the enthusiasm and the vigor of which his youth is capable, so that he may reform and revolutionize his home. Make him the torch-bearer of rational, new and healthy ideas.

THE SCHOOL CHILD IN ITS RELATION TO EUGENICS

BY

L. T. ROYSTER

"Know thyself, presume not God to scan,
The proper study of mankind is man."

To the scientist of to-day, there appears a strange admixture of truth and misconception in these words of the poet-philosopher. To know ourselves is essential to all human attainment and self-control; while the proper study of mankind is certainly *man*. But how are we to acquire such knowledge save by a close scanning or critical scrutiny of God himself through an investigation of His laws, *i. e.*, the laws of Nature. Many of these laws are known to us and their method of work fairly well understood and their ultimate consummation appreciated and yet we fail in many instances to take advantage of our knowledge and then wonder why the outcome of certain events is as it is.

This is notably true in the propagation of the human species. Not that we fail to recognize that reproduction results from the union of the cells, for, in a measure, we are guided to this through a purely animal instinct, and even in the choice of cells which is to result in the reproduction of kind, the impelling force is as a rule still instinctive or animal rather than intellectual. But we do fail to recognize that the immutable law that like begets like is as potent in the human species as it is in the lower animal or vegetable. On the intelligent choice of cells, therefore, the eugenicist bases his plea for rational selection.

Eugenics being a relatively recent study the pendulum is swinging rather rapidly and reaching greatly diverse positions. Most of the study, up to the present moment, has been based entirely on heredity with the consequent note of fatalism. Those students of the subject, however, who, I think, have looked at the matter more conservatively recognize the vast importance of heredity and yet give due consideration to the part played by environment in the development of cells and their determiners. We know that only an oak can grow from an acorn, but on the kind of soil, the climatic conditions and the environment depends the kind of oak, *i. e.*, the finished product. Therefore, regardless of what kind of cells with which we are dealing, whether vegetable or animal, the kind of finished product must depend on the nature of the cells (inherent) with which we start and their development through subsequent and outside influence. These influences in the main are of two kinds—good and bad—and one usually is stronger or at least more

potent in its action and influence. This results in the superior development of one set of cells over another, allowing a certain portion to remain latent or dormant. These dormant cells are by no means dead, but are frequently capable of being aroused into action by accidental or momentary stimuli. In the light of this conception may be explained, biologically, temptation on the one hand and sudden acts of heroism and even unusual manifestations of genius on the other.

That eugenical idealism cannot be attained in a short period of time is manifest, yet the hope of ultimate success is strengthened in the recognized awakening of thinking men and women. How far we can go in the selection of cells is, at present, an open question.

The marriage license should certainly, even at once, be accompanied by a certificate of health embracing freedom from active venereal disease or tuberculosis and freedom from inherited taint of feeble mindedness. Beyond this point I believe we cannot yet go. The public will recoil at the idea of mating on a purely intellectual or rational basis, because sentiment is a strong and useful characteristic of the human mind.

The improvement of the human stock can be accomplished through two great measures, legislation and education. Legislation is so dependent on the education of the people as to the importance of health and virility in a nation that, in reality, through education alone may be seen the ultimate solution of the problem. Through sane and conservative legislation, however, we should be able to prevent marriage among the manifestly unfit, both physical and mental. The physically unfit may include as already suggested those suffering from active venereal diseases, whereby their direct transmission to the mate may be prevented, but also the transmission of either active lesions or latent taints which may result disastrously, at a later period to the offspring; the tuberculous, alcoholic, openly immoral (probably mental defectives) and the feeble minded.

In regard to the feeble minded the law should certainly require segregation at least, in the home if preferred by those who are able to supply the proper care for those afflicted, but preferably in proper institutions; the latter should be compulsory where home training is impossible. The feeble minded call for our most careful supervision for very many reasons; they are exceedingly prolific; illegitimacy is very common among them, and from their ranks are recruited a large per cent. of the habitually immoral.

The question of the method of control is at present a debatable one, whether by sterilization or segregation. Sterilization will prevent reproduction but will not prevent immorality and the consequent spread of venereal disease. Perhaps a combination of these methods will prevail.

However much laws are passed, public sentiment must be aroused as to their necessity and to back them up. Only through a general educational campaign can this be brought about.

It is hardly likely that a great deal can be accomplished in less than a generation and by that time those of us of the present generation will have passed out of the control of affairs and others will have taken our places. Our aim, therefore, must be to educate the generation which is coming on to take our places.

Our best opportunity lies manifestly in the school room, here we can implant the principle of eugenics when the mind is pliant and receptive, during the formative years of life, and so implant these principles that they will become just as inherent as honesty, patriotism, veneration and other desirable characteristics.

The child is taught history, political and militant, and yet is kept in ignorance of the effects on nations of immorality and bad breeding. He is taught patriotism through a respect for the flag, a regard for law and protection from an invading enemy and yet that patriotism which means better citizenship, health conditions and all that makes for virile manhood is neglected. Is it not time that the instruction of the youth of our land was broadened and is not the wonderful school system of the country the very opportune channel through which to work for the future improvement of the nation? Why should we neglect the most potent of all factors, the education of the children who are in a short generation to be the mothers and fathers, and in the seats of government?

Biology should be regarded as a fundamental just as the three R's are, for only through biology can be taught the laws of nature by which the race is propagated, the conception of cells and cell plasma and that they are of two kinds—good and bad; that through certain determiners and their development are character and health established; through biology can the child best be taught sex relationship in a delicate manner and entirely within the bounds of propriety, and thus be fully prepared gradually for knowledge which comes to him more or less abruptly and from sources which are rarely wholesome but rather vulgar and suggestive.

The child at this age must also be impressed with the moral wrong done in bringing unfit offspring into the world. This should be taught as a fundamental principle and in such a way as to be incorporated into the whole make up of the individual. The far-reaching effects of the various diseases, not only directly on the individual, but also their effects when transmitted to the next generation, should be told in plain terms without reserve or prudery and yet without suggestiveness. The importance of personal hygiene should be so thoroughly taught that

it becomes a habit to such an extent that no other than a hygienic life would be considered.

The various forms of domestic science should form a very considerable part of the school curriculum, not only because of their importance in everyday life, but because right living in the home, which can be taught more effectively in school than elsewhere, is a potent factor in the problem of eugenics.

By far the most vital part of domestic science and the part at present most neglected, however, is the nursery. Young girls enter into the marriage relation entirely unprepared in mind or body for what lies before them; become mothers, the highest office in life, without having the faintest idea of the care of the infant, with the result that many of them learn the proper care of children at the expense of the life of at least their first born. Why should not the care of infants be incorporated into a course in domestic science? The public school system should be the pioneer in such a movement and thus serve the cause of eugenics as it can be served in no other way.

VITAL STATISTICS IN RELATION TO SCHOOL HYGIENE

BY

CHARLES W. HARGITT

The call to public health has never, perhaps, in the history of the race been more emphatic than at present. It has in a way become a sort of passion of civilization. And this is ominous of that newer conception of the causal factors of disease and the natural laws concerned in the relation of man to those dominant forces of nature which have been so thoroughly investigated during the latter half of the century just past. We have come to realize as never before that man as part and parcel of nature is inextricably associated with his environment, acting and reacting upon it and responsive to it at every period of his life.

The scientific method, which has become so dominant in thought and practice, has of recent years been applied to problems of human health with all the rigors of its merciless logic. Among these methods, or rather a phase of the general method, is that of statistics or the coördination and correlation of all possible data relating to a given problem. By vital statistics may be designated those data of human life, its generation, laws of growth, health, longevity, etc.

When one recalls that old adage of an ancient civilization—"Know thyself"—it might be inferred that there were nothing new or worth while for modern inquiry. We may grant that the problem is not *new*. From the time of that far-off era in human history when such a motto as that just noted became possible even to the present time there has not been lacking earnest inquisition. In that splendid Utopia portrayed in Plato's Republic, one may find rather clear insight into certain aspects of the subject which may even to this day be worthy of careful consideration. And had its author had that knowledge of the scientific method and the facts now familiar to us it would not be rash to suggest that his so-called Utopia might have been no less enduring and glorious than have the art and philosophy and literature of that golden age. It is in our newer and clearer knowledge of the facts of heredity and the laws which control them that we may claim an insight and vantage peculiarly modern.

Unless one has had occasion to seriously undertake to work out some of the problems of human weal or social progress he could hardly guess the paucity of data bearing thereon. It might be supposed that with a government like that of the United States, with its great departments

of industry and commerce, its bureaus of animal and plant industry, of commerce and labor, statistics, etc., there should be available all possible data of human affairs. That there are enormous bodies of data on various of these subjects there is not the least doubt. And the same is largely true of other countries and peoples. One may find any amount of data bearing upon improved modes of agriculture, stock breeding, plant culture, etc., from great to small. Upon data available from these sources the markets of the world have been "cornered," fortunes made in wheat and corn pits. The stock markets are pulses which reveal the state of economic health as related to commerce. But when one seeks to coordinate data as to that phase of statistics which we call "*vital*," those which touch on problems of human generation and development, conditions which make for weal or woe, the laws of heredity as relating to health both of body and mind, conditions which have to do with moral or social progress, crime, pauperism, insanity, etc., he will seek largely in vain.

The object of this discussion is a call for awakening and inquiry; a call for the recognition of at least as much concern and pains on behalf of children of the nation as upon its calves and colts, its pigs and poultry; a call for an appreciation of the essentially identical laws of hygiene as they relate to the one or the other or all sorts of living things, rather than the assumption that the writer has any new light or novel scheme of school betterment to promulgate. In several recent utterances through the scientific press he has sought to give expression to some of these convictions and may beg to refer to them for certain details which the scope of the present paper will not allow.*

As a problem in school hygiene the relation of the above may not at first sight be obvious, but it is hoped that what follows may render this doubt less doubtful. School conditions and products have not been without sharp protest among us for several years. Indeed, at this very time our school systems and methods have been the target of some vigorous criticism from various sources. Let it be granted that much of this has been sensational or even hysterical in not a few cases; suppose we discount much of it as the vaporings of faddists who have some hobby to parade or some pet scheme to exploit; allow if you choose that still other phases of this criticism are expressions of superficiality or misapprehension; still it must not be overlooked that some of it, too much for our comfort, comes from thoroughly sane and wholesome sources, from commissions of inquiry, from teachers of sound experience, from professors, presidents, critical students of educational problems of this

*Medical Review of Reviews, April, 1913; Science, May 16, 1913; Popular Science Monthly, October, 1913.

and other countries. It is this last which cannot be ignored or sneered out of court.

Let us set about an analysis of the situation and conditions. It is rather evident that somewhere there is deficiency. Can we locate it? We may look in two directions for a solution, namely, into the nature and methods of the schools, the ideals and aims of our educational systems; or we may carry our inquiry back of these to an inquiry into the nature of the subject of our systems, that is, to the child. The first has been our usual method of procedure. Seldom have we taken a scientific peep into the physiology of either physical or mental development or growth. Our eyes have been focused on school buildings, school programs, sessions and hours, etc. These are not unimportant by any means. Nor is it unnecessary to study school methods and their relations to hygiene—courses, books, light, exercise, etc. But given all consideration to these have we yet been as critical as we may? It is true that these relate more or less to the child, its general health and comfort, providing the environment most conducive to the ends sought. But there still remains a line of inquiry directed to the nature and constitution of the child itself. As an indication of growing appreciation of this point it is only necessary to cite the now generally accepted provisions for medical inspection of schools. It has been found that there may be important relations between not only sight and hearing and educational method, but that teeth, stomach, tonsils—in a word, the whole problem of food and nutrition stands intimately correlated with these ends. But we are as yet only touching the border of the matter. We are beginning to suspect that back of all these and conditioning them are constitutional, *i. e.*, hereditary conditions which relate to antecedents and from which there is no appeal. All this we have quietly ignored, if even it has been suspected. On the other hand we have constructed our system and organized our methods on the adage "*created free and equal.*" Let it be assumed that before the law as relates to moral or civil responsibility and opportunity there is much in this assumption to challenge consideration. But when elaborate systems of compulsory school attendance and identical school methods and exactions are prescribed without distinction as to antecedents we fly in the face of nature and experience and become guilty of the charge of "cruelty to animals." It is the ominous negation of this adage which must give us pause. Every teacher of sound pedagogical insight and experience knows very well that equality of educability is sheer myth. To one familiar with even the elementary facts of biology it must be one of the most obvious of scientific deductions that children under known laws of heredity are born under bondage to limitations, or with susceptibilities and capacities which render impossible any hard and fast method

of dealing with mental growth by a given mode of school life. As well expect the potter to create all the rich variety of ware, from the crude earthen pot to the finest triumph of Wedgewood, from one and the same mass of clay, as to expect the school potter to mold all sorts of brainclay into the highly wrought product of an Angelo or an Aristotle. Not every child is fit for the conventional school. Comparatively few are ever capable of those higher phases of educational achievement involved in the college or university.

But how shall the teacher know the fit from the unfit? Just here is the crux of our problem. There must be found some means of ascertaining them. It is here that our human statistics become indispensable. In the annual birth product of a country are all sorts and conditions of human brains. These are almost fully developed at the time of birth, and before they come to the teacher are of nearly full size, with the cell elements complete. They range from the potentialities of "mute, inglorious Miltons" to the imbecile or feeble-minded. They have been martialed into the school by law according to the *almanac*. No question has been raised as to *mental* age. And to this indiscriminate mass, this untested human grist, the grind of schools is set agoing! But, what can be done? The problem is not simple. There cannot be a school for every individual child! True, but there may be schools graded according to mental states instead of birthdays. But there must be something which antedates the school. Vital statistics should begin and continue (not end) from birth on through babyhood, early childhood, up to kindergarten age, and should include data as to parentage, physical characteristics, mental traits, temperamental aspects and moral characteristics. With an abstract of this pedigree of birth and antecedents and childhood at the command of the teacher or school authorities the elementary school is no longer the indiscriminate mass of human possibilities but one which can be easily assorted and disposed according to capacity.

Then there should come, as the next edition of statistics, those of the school itself, continuing throughout the several grades. These can be made to include a record of the rate and character of progress; the mental aptitudes; temperamental and moral traits. Here becomes possible the accumulation of a body of data relating to the history of individuals, families, racial traits, etc., with whatever of incipient lawlessness or mental or moral obliquity the child may reveal at this time. From such statistics would be available far superior evidence as to hereditary insanity or similar idiosyncrasy than would be that afforded by a so-called expert alienist. But through the progress of the school itself there are now well known methods of testing the mental state of the child at every stage of its school progress. The Binet Scale has been

shown to be available for a range of mental tests touching almost the entire constitution of the child, thus affording an easy mode of adapting the sort of educational effort suited to its needs.

With such a school pedigree carried forward to the period of promotion to high school or college one has some sort of basis for making a promotion which would mean far more than the mere passing of an examination. In the upper school, or college later, the teacher would be provided with something better than "pass cards," namely, a body of intelligent data which indicates potentialities for this or that course, this vocation or that, one profession rather than another, because of qualities, while incipient, nevertheless present.

What of all this in relation to school hygiene? It hardly need be shown that, not only as relating to physical health there is here much that is fundamental, but more especially as it relates to the mental or moral weal of the child or pupil it is still more fundamental and important. Mental hygiene, like that of the body, is largely conditioned by heredity. Nurture may do much or little as to the future man or woman according as nature has given good or bad basic material upon which to work.

THE SCHOOL AND VITAL STATISTICS

BY

FRANKLIN C. GRAM

At first thought it might seem that the school and vital statistics are antithesis and their points of contact about as opposite as the two poles.

The same might have been said about medical school inspection only a few years ago.

In an age of progress the dead languages give way to technical education and the philosophy of unknown quantities to manual training.

Granting this, you will ask, "Where will the study of vital statistics fit into the school curriculum?"

It needed no argument to make room for the art of book-keeping. Even the unintelligent recognized the necessity of a knowledge by which, in his crude way, he might measure his financial loss or gain during a given period.

We have come to recognize as essentials, many things which were formerly regarded as ideals, phantasms.

Social service and social surveys, like the luxuries of yesterday, have become necessities of to-day.

As bookkeeping determines the financial status of the party involved, so vital statistics—the keystone of the arch of all public health work—indicates the health and the life of a community.

In the past we were satisfied to call a physician in time of illness only; now this condition is undergoing a rapid evolution. Small as well as large municipalities have organized public health service for the protection of residents, the extent of the work being measured only by the necessities or requirements of the localities. We no longer remain in an inertia from which we are aroused by the prevalence of pestilence, but we build up physical and material barriers against contagion, and these barriers we call "Prevention."

The science of preventive medicine holds an equal place with that branch devoted to the cure of disease, and indications are that it will soon outdistance the latter.

If we teach our children that certain diseases, such as measles and whooping cough, which have been regarded as blessed essentials of childhood, and which our mothers were wont to invite by contact in order to have them over with as early in life as possible, are not essential but more fatal than dreaded pestilence, then we assist them in retaining a normal constitution and possibly prevent them from filling an early grave.

To a proper study of all this it is well to have some knowledge of morbidity and mortality conditions. It is necessary to know the number of births in a community in order to compare it with the number of deaths in the same place. By this we learn the relative birth and death rates. As long as the birth rate is higher than the death rate we can form our deductions based on the relative degree of difference; but when the death rate exceeds the birth rate any tyro will conclude that such community is on the road to extinction.

Nor is such study without profit to pupils before they reach high school or college. It is particularly valuable before that stage is reached, because during this period of life many of the contagious diseases occur which cut short a promising career or leave the individual burdened with an infirmity for life.

Then why not study that which pertains to life or health?

Why wait until loaded with infirmities which even rudimentary knowledge might have prevented?

It is useless to learn how we might have prevented disease after we have it.

None of these studies can be successfully followed without combining therewith a study of vital statistics. They are all essentials of a common school education. It is essential to know what the average death rate ought to be, and a comparison with what it actually is will bring its own conclusion to the young mind with the same promptness as it does to the trained sanitarian.

By the same methods an analysis of the death rate will show at what period of life the most deaths occur. The ratio occurring in infancy will lead to inquiry and study of causation, with the ultimate result of efforts to eliminate the causes.

The reduction of infant mortality has long ceased to be a subject of philanthropy or of public spirited benevolence. It is a recognized duty of the State. The State can do nothing without the coöperation of its citizens, and unless its citizens can be made to understand a condition there can be no coöperation, because it then becomes a matter of law, and not of duty.

It is to foster such principles and to spread such knowledge that "Little Mothers' Clubs" have been organized in many places. Girls are taught how to care for baby and what to do or not to do if he is to remain well. Younger girls bring their dolls, older girls bring their baby brother, and the practical lessons prove so interesting that all such clubs become fountains of knowledge whose benefits are beyond measure.

Vital statistics show at what period of life the lowest and highest mortality rates exist, the causes which produce death at later periods,

and this again leads to the study of prevention. Connected with this study is a natural inquiry into the causation of disease, and while such study still presents many obstacles to the untutored mind yet it is within the range of possibility.

In most places somewhat accurate records are kept of deaths, while little or no attention is paid to the births.

No business man could ever tell how he stood financially with a system of bookkeeping which contained an accurate account of his expenditures, and had a total disregard for his income.

Vital statistics is the bookkeeping of a community. It shows the assets as well as the liabilities. It does more. It forms a permanent record of every individual from the beginning to the end of life.

In some places most accurate records are registered of pedigreed animals, while human beings may come and go, and no one will know that they ever existed.

Perhaps the first condition to be met is how to provide the teacher with proper information to be imparted to the pupils.

To a great extent we must rely on text books. Unfortunately not all text books are written by competent persons. Those best qualified do not always write, but instead the most prolific writers are often fanatics or visionaries with perverted ideas about alcohol and food, which they masquerade under the cloak of "hygiene."

Vital statistics will also assist the study of sex hygiene. This is another study which not so long ago was regarded with something short of awe, but which is making such headway as to indicate an early place in the school course of all progressive localities.

Summarizing my arguments on this subject I desire to show that the study of vital statistics is entitled to a place in schools on the following grounds:

1st. That it leads to an inquiry into morbidity and mortality conditions of the home locality.

2nd. That it forms a basis for comparison with what such conditions ought to be.

3rd. That it assists in the study of prevention of disease and in the knowledge of public health.

4th. That it is an essential adjunct to medical school inspection and school nursing.

5th. That a knowledge of health and disease forms the bulwark of nations.

6th. That youth is the best period in life for beginning the study of such knowledge.

THE SLEEP OF SCHOOL CHILDREN; ITS DISTRIBUTION ACCORDING TO AGE, AND ITS RELATION TO PHYSICAL AND MENTAL EFFICIENCY

BY

LEWIS M. TERMAN

Sleep ranks with food as one of the most imperative needs of the human organism, and like food it has its educational and economical aspects as well as its physiological and biological. But while diet has long received a liberal share of attention from economist, hygienist, and biologist, the scientific study of sleep has been hardly more than initiated.

Among the important questions which may be raised regarding the sleep of school children are the following: What is the optimum amount of sleep for physical and mental efficiency and how are we affected by variations above or below this amount? How great are the normal individual differences? To what extent is the instinct of sleep educable? How is it influenced by food habits, by rise and fall of barometric pressure, or by changes in humidity and other weather conditions? How is it affected in quantity and quality by ventilation, by light, by the presence of others in the same bed or rooms, etc.? How is it influenced by various evening occupations? How much and what kind of home study can be assigned by the school without a detrimental effect upon sleep?

In regard to the amount of sleep which children of different ages should have, we have a large number of estimates based upon opinion, but no answer based on data of scientific validity.

The most quoted of these estimates is that of Dr. Clement Dukes, whose theoretical norms have been very generally accepted. Other notable standards are those of Hertel, Bernhard and Claparède. A table which I have prepared of such estimates, taken from about a dozen different sources, shows a striking lack of agreement among authorities on this point.

The difference of opinion amounts to $2\frac{1}{2}$ hours for the age six, $2\frac{1}{2}$ hours for seven years, 2 hours for eight years, 2 hours for nine years, etc. Dukes recommends as many hours for age eighteen as Manaccine for age thirteen; and as many hours for age fourteen as the Manaccine for age ten. Dukes' estimate for eleven years also equals Key's for six years. In like manner, twenty-nine medical officers of English

schools who were interrogated by Acland, estimated the sleep needs of twelve-year old boys all the way from nine hours to between ten and eleven.

Several investigations have been made of the number of hours children do sleep, though obviously we cannot in this way determine conclusively how many hours they ought to sleep. One of the earliest of those was by Hertel who in his study entitled "Overpressure in the Schools of Denmark" presents sleep records from 3,141 boys and 1,211 girls in the schools of Copenhagen. These averaged about $10\frac{1}{2}$ to 11 hours of sleep at six years, the amount decreasing to $9\frac{1}{2}$ hours at twelve years and to about $8\frac{1}{2}$ at sixteen years. Sleep was most deficient among pupils pursuing the arduous classical courses, where it often fell to 6 or 7 hours. Acland found that the hours of "undisturbed rest" given to boys ten to thirteen years of age in forty English boarding schools ranged from 8 to 10, averaging about 9. The actual time of sleep must be somewhat less than this and is certainly far below the amount physicians usually consider the optimum.

The most extensive investigations of the sleep of school children are those of Dr. L. Bernhard and Dr. Alice Ravenhill. The former secured data from 6,551 German children six to fourteen years of age, and the latter from 6,180 English children of about the same ages. The average amount of sleep for each year is shown in the following table:

TABLE—SLEEP OF GERMAN AND ENGLISH CHILDREN.

Age.....		6	7	8	9	10	11	12	13
Sleep in hours and minutes.....	Bernhard..	10:20	9:50	9:25	9:20	9:10	8:55	8:25	7:50
	Ravenhill..	10:30	10:30	9:30	9:15	9:15	8:45	8:15	8:30
		10:45	10:30	10:15	9:30	9:30	9:15	8:00	7:30
									Boys
									Girls

Using his own estimate of the amount of sleep which children ought to have, Bernhard computes that the sleep deficiency among his 6,551 pupils ranges from about an hour at the age of seven to nearly an hour and three-quarters at fourteen years. This would represent a total sleep loss per year of over 400 hours for the average child of six and over 600 hours for the average child of fourteen years. Miss Ravenhill, basing her estimate upon the standards furnished by Dr. Dukes, finds an average sleep deficiency for English children of nearly 25 per cent; while that for girls of thirteen years amounts to a daily loss of $3\frac{1}{4}$ hours! Children of six years were found who slept only 7 hours, and children of twelve years 4 to 6 hours.

During the year 1911-1912 I carried out with the assistance of a graduate student an investigation of the sleep of school children which had for its purpose, (1) to ascertain by more careful methods than had yet been employed the hours of sleep of children in the western states of America; (2) to discover what correlation exists between hours of sleep and school success; and (3) to find the relation of hours of sleep to social status, home study and the possession of typical "nervous" traits. Records were secured from 2,692 children between 16 and 20 years of age in the California cities of Stockton, San Jose, Alameda and Los Gatos; also a few records from Tempe, Arizona, and Monmouth, Oregon.

By means of a carefully planned and uniform procedure data were secured showing the exact time of retiring, the approximate length of time required for going to sleep, the exact time of waking, whether waking was spontaneous, how many other persons slept in the same room and the same bed, and the amount of ventilation in the bedroom.*

The amount of sleep for these 2,692 persons is shown in hours and minutes in the following table:

Age	No. of Records	Av. No. of Hrs. of Sleep	Age	No. of Records	Av. No. of Hrs. of Sleep
6-7	37	11:14	13-14	250	9:31
7-8	147	10:41	14-15	244	9:06
8-9	218	10:42	15-16	201	8:54
9-10	291	10:13	16-17	167	8:30
10-11	307	9:56	17-18	117	8:46
11-12	282	10:00	18-19	43	8:46
12-13	312	9:36	University Students	51	7:47



FIGURE I

(*For details of this study see the J. of Ed. Psych. for March, April and May, 1913.)

The most important fact in the above table is the striking excess of sleep among these children as compared with the German and English children of Bernhard and Ravenhill. This excess amounts for most ages to between one hour and one hour and a half. At the same time the sleep averages found in this investigation fall from three fourths of an hour to two hours below the theoretical standards set by Dr. Duker.



FIGURE 2

Although it can not be assumed that the averages secured in this investigation furnish absolutely reliable norms of the amount children of various ages ought to sleep, it is believed that they are of more value for comparative purposes than any which have hitherto been available. The averages of Bernhard and Ravenhill probably show a subnormal amount of sleep, while the theoretical and traditionally accepted norms of Duker are in all probability too high.

THE RELATION OF SLEEP TO INTELLIGENCE, SCHOOL SUCCESS AND NERVOUSNESS.

In order to throw light on these points supplementary information was secured from each of 1,350 out of the total 2,962 individuals. This included the degree of intelligence as estimated by the teacher on a scale of seven, the social status of the home as estimated on a scale of four, the number of "nervous" traits possessed by the child, and his school success. School success was measured by the child's grades in the different subjects received at the end of the previous quarter or semester. Correlations were then computed, for the different ages separately, by the well-known formula of Karl Pearson.

In every case it was found that there was practically no correlation, either positive or negative, between sleep on the one hand and intelligence, social status, "nervous" traits, or success in any school subject on the other. The instances in which the coefficient of correlation exceeded + .10

or — .10 were so few and appeared so sporadically in the different ages as to be wholly without significance. It was even found that the school grades of the pupils sleeping the least averaged slightly above those of the ten sleeping the most.

How are we to explain a result so at variance with current belief?

One interpretation would be that the average child receives more sleep than he really needs. It has been experimentally shown that sleep ordinarily becomes very much more superficial after four or five hours, and it has been suggested that this period of less effective sleep might be considerably shortened without material loss. In harmony with this, Weygandt's tests of mental efficiency seemed to indicate, for himself, complete recovery from the most difficult kinds of mental work after five hours of sleep. On the other hand, Netschajeff's records of the relation between his own sleep and mental efficiency during a period of four months show that the latter appeared to be affected by slight deficiencies of sleep. Further investigation is urgently needed.

A second explanation of the lack of correlations is offered by the theory that quantitative differences in sleep may be offset by qualitative differences. If such qualitative differences exist, then sleep can not be accurately measured in units of time alone. The observations of Patrick and Gilbert, who for experimental purposes went without sleep for ninety hours, showed that only a small fraction of the sleep lost (one-third to one-sixth) was later made up, but that the sleep which followed the experiment was much more profound than usual. It is possible, also, that sleep habits may be educable with respect to quality of the rest secured.

A third explanation of our results would invoke what has been termed the "factor of safety." This may be sufficiently large to enable both body and mind for many years to withstand with apparent success a real and considerable sleep deficiency, while at the same time the reservoirs of energy are being insidiously depleted and the power of resistance undermined. It would be rash to infer that any mode of life is safe which does not produce immediate and apparent injury. The factor of safety must be kept intact. We want not merely the strength to do the average work of each day, but we need to keep the reservoirs of energy stored with abundant reserve so that we may withstand the sieges of deprivation, disease, accident and overwork which are almost inevitable in the strenuous life of to-day.

In the fourth place, the lack of correlation between sleep and intelligence may be accounted for on the hypothesis that the heightened brain activity which is necessary for high grade intellectual activity involves a kind of neural excitement which itself predisposes to wakefulness. To test this hypothesis, sleep records were secured from 383

feeble-minded individuals, from six to more than sixty years of age, in the Vineland Training School.

It was found that the feeble-minded children sleep much *less* than normal children of the same age, the feeble-minded adults much *more* than normal adults. As regards sleep the feeble-minded retain throughout life the partial characteristics of childhood. Otherwise, there seems to be little relation between the amount of sleep and the grade of intelligence.

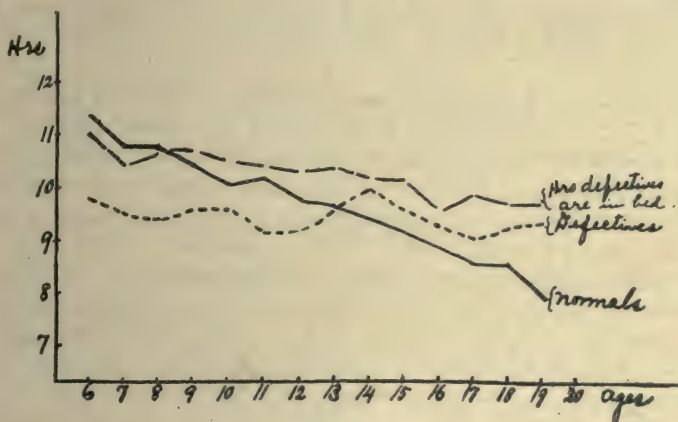


FIGURE 3

Whatever the correct explanation may be for the lack of correlation between hours of sleep and school success, intelligence, etc., we are not absolutely forced to the conclusion that the minimum amount of sleep secured by our children (ranging from about 9 hours at six to 6 hours at sixteen) is ample for their needs. It may well be that any individual child will attain his greatest mental efficiency only by sleeping the maximum number of hours of which *he* is capable. This maximum for one may be much lower than for another, yet both may be the better for sleeping up to their respective capacities.

Sleep is one of the many biological rhythms stamped into the organism, in part, by the movement of the planet on which we live. To interfere unduly with such an ancient and physiologically established rhythm would theoretically appear to be an unsafe experiment. Sleep is an instinct which involves the entire body, and is not simply a function of the brain. The brainless dogs of Golz and the brainless pigeons of Manacine exhibited the same sleep rhythms after the removal of the cerebrum as before. Psychiatrists tell us that many mental disorders are preceded by protracted insomnia. Loss of sleep has been experimentally shown to cause a decrease in the number of red corpuscles,

while the beat of the heart is accelerated to compensate for the poverty of the blood. Far from being a bad habit, as Girondeau believed, sleep has been evolved as the best biological means of making possible intense periodic activity of mind and body.

Besides acting to recharge the batteries of life, sleep has a settling and confirmatory influence upon the mental activities which precede it. To "sleep over a problem" is a means of transforming a chaos of puzzled mentation into order and clarity. The learning processes which are initiated during the work of the day take deeper root during the hours of sleep. In sleep, life purposes may mature and ideals take shape.

On the other hand there is probably no justification for the exaggerated importance sometimes attributed to much sleeping. Sleep is but one of the many needs of children, and it is foolish to make it the scapegoat for all kinds of physical and mental evils as hygienists have so often done. It is possible that the quantity of sleep is less important than its quality, and when disturbances of the latter occur they are more likely to be the *effect* of ill health than its cause. Instead of directing our attention to the disturbed sleep as such it is wiser to search out the underlying trouble and to remedy that. We may even bear in mind the possibility of excess of sleep. This danger is strongly emphasized by Manaceine, who finds it sometimes productive of albuminuria, of a slackening of the peristaltic movements of the intestines with consequent tendency to constipation, and of chronic sluggishness of mind and body.

As regards the school child, the wisest course in all probability is for us to make the conditions such that the child will spontaneously sleep as many hours per day as he wants to sleep, while avoiding all conditions which would tend either to abbreviate or unduly prolong the sleep beyond this standard. Liberal allowance should also be made for genuine individual differences, for not all the range of variation which we have found in the hours of sleep for children of any particular age can be accounted for on the basis of habit and environment. There are undoubtedly physiological idiosyncrasies which make nine hours for one child equivalent to eleven hours for another.

SESSION EIGHTEEN

Room B.

Saturday, August 30th, 9:00 A.M.

SCHOOL HYGIENE IN RELATION TO THE HOME AND THE COMMUNITY (Part Two)

IRA S. WILE, M.D., *Chairman*

DR. F. W. BARROWS, Buffalo, N. Y., *Vice-Chairman*

Program of Session Eighteen

IRA S. WILE, M.S., M.D., Member of the Board of Education, New York City. "Medical Inspection in the Schools as a Community Investment."

DR. ANTONIO VIDAL, Buenos Aires, Argentina,
and

DR. CARLOS ROBERTSON, Buenos Aires, Argentina. "Anti-Alcoholism and the Public Education." Joint paper.

H. L. K. SHAW, M.D., Consulting Pediatrician, State and City Board of Health, Albany, N. Y. "Medical Supervision of the Child Between Infancy and School Age."

REBECCA STONEROAD, M.D., Director of Physical Training, Washington, D. C. "Health Statistics of Public School Children of Washington, D. C., with Special Reference to Grade, Sex and Environment."

JACOB SOBEL, M.D., Borough Chief, Division of Child Hygiene, Department of Health, New York City. "Prejudices and Superstitions Met with in the Medical Inspection of School Children."

J. HERBERT DONNELLY, M.D., Tuberculosis Inspector, Department of Health, Buffalo, N. Y. "Tuberculosis in School Children."

J. H. KELLOGG, M.D., Battle Creek Sanatorium, Mich. "Unwholesome Diet, a Prime Cause of Inefficiency in School Children."

Papers Presented in Absentia in Session Eighteen**(Read by Title)**

M. C. SCHUYTEN, Ph.D., Director of Paedological Service and Paedological Laboratory of the City of Antwerp; Professor New College, Brussels; President of the International Committee of the International Congress on Paedology, Antwerp, Belgium. "The Co-efficient of Nutrition in Antwerp School Children."

FREDERICK L. HOFFMAN, LL.D., Statistician Prudential Life Insurance Company of America, Newark, N. J. "Some Vital Statistics of Children of School Age."

ARTHUR BEIK, Ph.D., Fellow, Clark University, Worcester, Mass. "The Hygiene of the Child at the Period When School Life Begins."

WILLIAM A. MCKEEVER, A.M., Ph.D., Professor of Child Welfare, University of Kansas, Lawrence, Kan. "The Boy and the Tobacco Problem."

MEDICAL INSPECTION IN THE SCHOOLS AS A COMMUNITY INVESTMENT

BY

IRA S. WILE

In discussing medical inspection, it is essential to appreciate its full significance. In a memorandum of the British Board of Education there is found this concise reason for the organization of medical inspection in schools. Medical inspection "is founded on a recognition of the close connection which exists between the physical and mental condition of the children and the whole process of education." It "seeks to secure ultimately for every child, normal or defective, conditions of life compatible with the full and effective development of its organic functions, its special senses, and its mental powers, which constitute a true education."

Originally medical inspection was instituted to detect contagious diseases in order to eliminate their spread by school children. Later the belief arose that retardation and deficiencies in studies were due to physical defects, particularly those of the sense organs. This caused an expansion of medical inspection to medical examination. To-day medical inspection virtually includes the discovery of contagious diseases and the determination of physical defects which interfere with ability to perform school work or the detection of physical abnormalities which if neglected will affect the future efficiency of the children.

In the United States at least \$500,000,000 are expended annually for the maintenance of schools. This vast appropriation does not include any expenditures for the physical care of the scholars. In the development of a school system the children to be taught are of at least equal importance to the subjects comprising the curriculum or the methods of teaching. The maximum benefits of an educational plan can be secured only by normal children.

It is needless to enter into a discussion of the historical development of medical inspection. It exists in various degrees of efficiency throughout the civilized world. The growth of the system is at present extensive and in the United States it is being given increasingly serious attention.

In order to benefit children as a whole, no period of life affords greater opportunities than the time spent in school. The school physician or medical inspector is afforded an opportunity to serve in the guise of an advisory family physician for a period of 6 to 8 years to the parents of school children. To be reasonably effective, medical inspection must become organized medical supervision. The mere enumeration of de-

fects is suggestive but valueless, unless fortified by some follow-up plan which will bring about a correction of the defects noted. The most sensible scheme for school inspection is according to the plan inaugurated at Wiesbaden 1889, where children receive the attention of the medical inspectors upon entering school and during the 3rd, 5th and 8th years.

Medical inspection extends in two directions: 1. The inspection of the environment, that is the site, the school buildings, and the various factors of health therein contained; 2 the child—with all its defects and diseases. The medical inspector should consider problems of hygiene such as light, ventilation, heating, toilet facilities, etc., but primarily he must solve educational questions such as the establishment of time schedules, the arrangement of recesses, the grouping and specialization of classes. Broadly speaking, the work of medical inspection covers two general fields of endeavor; the preventive and the remedial. With the existent physical defects, correction is the aim of the medical inspector. The more valuable fields of effort is in the realm of prophylaxis. It is within his power to obviate further defects, deformities, and diseases during the period of school life so that deterioration may be prevented during the years of compulsory education. This forms the maximum hygienic benefit which makes medical inspection a valuable investment for the community.

Herbert Spencer wisely stated, "Perhaps nothing will so much hasten the time when body and mind will both be adequately cared for, as a diffusion of the belief that the preservation of health is a duty." Medical inspection, in so far as it relates to matters of health, proves its worth in the detection and elimination of contagious diseases. It must be realized that contagious diseases are not to be regarded merely in terms of mortality. The complications and sequelae which interfered with the proper development of the survivors from these diseases make their limitation of educational importance. By way of illustration in 1911, there were found in the schools of New York City and excluded 848 cases of diphtheria, 198 from scarlet fever, 114 from measles, 329 from pertussis and 178 from tuberculosis. Foci of disease were discovered and removed from school. To appreciate the importance of preventing their spread through school channels, one needs but consider the mortality rate during the school age. According to the U. S. Census report for 1911 deaths during the age periods 5 to 9 and 10 to 19 were as follows:

	5 to 9 Years	10 to 19 Years
Measles.....	501	303
Scarlet fever.....	1,485	620
Pertussis.....	243	32
Diphtheria.....	2,778	883
Tuberculosis.....	1,613	8,679
Epilepsy.....	82	319

	5 to 9 Years	10 to 19 Years
Acute endocarditis.....	214	413
Organic heart disease.....	830	2,191
Broncho pneumonia.....	622	336
Pneumonia.....	1,083	1,909
Diarrhoea enteritis.....	413	179
Acute nephritis.....	253	320
Bright's disease.....	239	707

It is noteworthy that the contagious diseases exhibited their greatest mortality below the tenth year of age. Statistics from Munich indicate that the mortality from measles may be decreased by 99% if the attack may be postponed from the years up to 5 to the period between 6 and 10. The same principle of decreasing the mortality rate by postponing the disease until vitality is increased, holds true for all contagious diseases. This becomes obvious from a consideration of the decrease of the mortality rate during the period 10 to 19 years as opposed to the first part of school life during the ages 5 to 9. Medical inspection in lessening contagion decreases not alone morbidity but mortality and thus conserves a large group of children. With the present decline in birth rates throughout the world, the salvage of children becomes of paramount importance. The conservation of childhood that results from postponing contagious diseases is of inestimable value to society.

The full health benefits of medical inspection, as far as defects are concerned, depend entirely upon a follow-up plan to secure results. Without considering the statistics of individual cities, the community must appreciate the seriousness of physical defects among our school children. According to Dr. Thomas D. Wood of the 20,000,000 school children in the United States, defects are present in the following proportions:

- 30% enlarged tonsils, adenoids or enlarged cervical glands.
- 5% spinal curvature, flat foot or some other moderate deformity.
- 50% defective teeth.
- 5% defective hearing.
- 25% defective vision.
- 25% malnutrition, in many cases due in part at least to one or more of other defects enumerated.

This experience is by no means abnormal. The experience of England and Wales for 1909 revealed defects in the following proportions:

- 10% defective vision.
- 3-5% defective hearing.
- 8% adenoids or tonsils sufficiently enlarged to obstruct the nose and throat.
- 20-40% defective teeth.
- 40% unclean heads.
- 1% tuberculosis.
- ½% heart disease.

"To be a nation of good animals is the first condition to national prosperity."—Spencer. In view of the proportion of physical defects it may be readily appreciated that medical inspection is a fundamental requirement for making good animals of our school children.

Together with the prevention of disease, medical inspection reveals the existence of physical defects and indicates the means of remedying them. The attention of school authorities may be directed to the methods of preventing physical abnormalities. The control of incipient diseases, such as tuberculosis and heart disease, becomes of the utmost importance when intelligence perceives that the cure or relief of these conditions depends upon their early detection. By way of accentuating this, the census records reveal the mortality from tuberculosis during the ages of 10 to 19 years as 8,679 as compared to 1,613 during the ages 5 to 9 (1911). The mortality from tuberculosis undoubtedly would have been lower had there been a uniform system of efficient medical inspection in schools to detect the incipient cases of tuberculosis.

Furthermore, by affording attention to the general physical health of school children, there is an opportunity for increasing the vitality of the growing generation. Medical inspection falls short if its tabulated statistics merely indicate the defects ascertained. The communal benefits of medical inspection accrue from the application of remedies to overcome the physical infirmities. The advice to families tends to lessen development of defects in future school children. Medical inspection aids the community in securing health as the first wealth.

From the standpoint of educational advantages, the community has much to gain. If medical inspection can establish the number of children suffering from malnutrition and then secure the coöperation necessary to restore the sufferers to a condition of normal vitality, the educational benefits will be enormous. The economic and educational value of nutrition may be partially understood from the fact that children with defective teeth take eight and a half years to go through eight grades of schools, while children with enlarged glands require 9.2 years to go through the same grades. It is hardly necessary to comment upon the rate of illness as it occurs among children in the primary schools. A large factor in the retardation of children in the elementary schools, is the absence due to ill health, and a large part of this ill health is due to malnutrition of the child. A starved mind requires physical, as well as mental pabulum.

If 40,000 children suffer retardation in school for one year because of the decrease in vitality due to adenoids and enlarged tonsils, as was reported in the State of Minnesota, the educational waste is evident. If the cost of instruction of each child is \$25 per annum, the economic loss would represent \$1,000,000. Possibly this economic decrement is

somewhat theoretical because the children would be receiving instruction anyway. The true deficit would be the decrease in education as a result of leaving school one or two grades below that reached by normal children.

Wallin has reported that in one school in Cleveland through the efforts of one doctor and one nurse during six months, 1,871 days of absence were saved. Such figures are merely suggestive. It is difficult to determine the exact relation between physical defects and retardation. No one will deny, however, that physical defects constitute one cause of retardation and that absence from schools is a large factor in causing non-promotion. Experience throughout the world has shown that medical inspection increases the attendance of children at school and thus extends the time and instructive possibilities for our educators. The real educational benefits of medical inspection are thus manifested in the amplified scholastic returns and the heightened efficiency of the future citizens.

Rational school administration requires the establishment of special classes according to the needs, strength and mentality of school children. To establish classes for anemic and tuberculous children or for children with speech defects or defective mentality or for children with cardiac disease, medical inspection becomes vital and essential. In the light of our present knowledge, the organization of classes for mental defectives must be based upon a recognition of the effect of physical defects upon mentality. No child should be regarded as mentally defective until its physical defects have been ascertained and remedied. The correction of defects of vision and hearing, the control of speech defects and the amelioration of malnutrition will eliminate from the category of mental defectives many children who may therefore be maintained in regular classes instead of requiring the institution of special or ungraded classes at increased cost.

By diminishing the days of absence, the community secure a higher rate of educational interest from its school investment. To quote Dr. Ayers in referring to the schools in New Jersey: "Here was a plant with a total investment (including absorbed interest) of some \$60,000,000 losing about 12% of its utility through the absence of pupils which is equal to about \$5,000,000 of capital standing idle, 75% of this absence due to sickness which caused a loss of 7,000,000 days or \$3,750,000." While this represents only the monetary loss, it is not difficult to imagine the corresponding educational unproductiveness. Dr. Cornell has estimated that there is a 6% loss of educational results in the case of physically defective children, regardless of the time incidentally wasted for normal children. Decreasing absence obviously affords teachers a better opportunity of performing their duties satisfactorily and consequently the community receives better educational service for the money expended upon the teaching force.

Closely related to physical defects is juvenile delinquency. Judges of juvenile courts are beginning to appreciate the necessity of medical examination as a condition of parole so as to restore the convicted delinquents to their optimum physical condition while on probation. The particular educational delinquency which hampers school efficiency is truancy. The exact relation of physical health to truancy has not been ascertained but there is much food for thought in the statement of Judge Estelle of the Omaha Juvenile Court: "In my judgment 60% of the cases of truancy which lead up often to delinquencies are brought about more by physical than mental difficulties."

The value of the detection and correction of physical defects in lessening retardation has received considerable attention. A recent study in New York City of 236 children with physical defects revealed the fact that of 185 children who had their physical defects corrected 176 showed enhanced educational progress as evidenced by promotion to higher classes within the grade. Nine failed to improve as did 51 children with physical defects that were not corrected. This is but a single illustration from the countless statistical examples now available.

The communal benefit in decreasing retardation is at once apparent from the declaration of Dr. Elson that, "Of all money spent on public education in American cities, one-tenth to one-eighth is spent in taking children over the work a second time.

A further educational return is made to the community through the accumulation of statistics relating physical defects to educational progress. This affords ample opportunity for hygienic research of a constructive educational type which increases the value of the educational system so that for the same expenditure of public funds greater educational results are achieved.

As a broad social aspect of medical inspection, society must recognize that the greatest strategic asset of a nation is the production of strong, capable, and intelligent citizens. The opportunity to secure this asset under medical direction occurs during the period of school attendance. Medical inspection, properly administered, ensures continued and constant supervision during the period of school life and is a most potent factor in promoting the welfare of potential citizens. Careful observation and guidance during the prepubertal years diminish the perversion of functions during puberty with consequent moral deviations. Juvenile crime may be lessened through prevention. Pubertal insanity may be guarded against. The diminution of the diseases of childhood develops the normally strong children and protects the weaklings from the oppressive and deteriorating influences of disease. The general strengthening of children physically, mentally and morally makes them more fit to cope with their environment at all times.

The social benefit of medical inspection is not revealed in the mere statistics relating to defects but is evidenced in the increased health and mental progress of those children whose defects are corrected. The social resources of the community are enriched through the preservation of vigorous minds whose frail bodies are carefully protected from the ravages of disease.

The Royal Commission on Physical Training in 1903 declared malnutrition to be the cause of low physical standards and suggested school meals as the cure. The establishment of high physical standards should be the first basis of communal welfare. Medical inspection promotes the welfare of the school children but its more useful social service is evidenced in the general public education as to the importance of health and the means by which it may be acquired.

Parental responsibility for the welfare of childhood is exalted because incipient diseases and retarding defects are called to the attention of parents. Parents are accountable for further safeguarding the health of their children. Thus results a general improvement in the hygienic conditions of the home and a better understanding of the relation of the family health to communal welfare. Medical inspection thus serves to link together in social interest in the welfare of school children.

The correction of defects increases the industrial efficiency of future citizens and thus tends to make them more valuable to the community. By increasing industrial efficiency the future will profit from a decrease in dependency and pauperism and a diminution in civic loss by death, sickness and incapacity. In the words of Sir Lauder Brunton, "It is cheaper to spend pence on children than pounds on paupers." By decreasing blindness, insanity and criminality and similar social burdens medical inspection tends to lighten future municipal expenditures for the relief of such conditions. Such are some of the positive benefits of medical inspection regarded as a communal investment.

The cost of medical inspection naturally must be considered. According to the figures given to the School Board of Harrisburg in 1908, the per capita cost of medical inspection varied from \$.005 to \$1.22. The salaries for medical inspection at the present time are not standardized. In England and in Germany, the medical inspector receives a larger recompense than in this country. Considering general expenses Montclair, N. J., 1907, spent \$1,716 for 2,563 children; Springfield, Mass., in 1907, spent \$2,000 for 10,605 children and New York City spent in 1907 \$200,134.96 for 558,722 children. The per capita cost for New York City in 1912 for medical inspection was \$.383. The effects of New York City's system of medical inspection is evidenced in the fact that in 1909 13.1% of the children examined had defective vision; in 1912, only 10.4%; defective nasal breathing 18.7% in 1909 and 7.6% in

1912; enlarged and hypertrophied tonsils 22% in 1909 and 10.4% in 1912. The per capita in New York City for actual work done is higher than stated, inasmuch as the appropriation permits the medical inspectors to investigate approximately only 250,000 children each year. But even with this increased per capita, it is patent that the results of the correction of defects warrant the expenditure.

The difficulty with calculations on the basis of medical inspection statistics lies in the fact that no uniform chart nor uniform nomenclature is utilized throughout the country. The figures too often show the number of medical inspections made but not the number of defects corrected. Per capita costs of medical inspection can only be understood from a recognition of the relation between the cost of medical inspection and the number of defects corrected. In other words, the value of medical inspection depends (1) upon the nature of the observations made; (2) an appreciation of the underlying causes of the symptoms noted; (3) the number of children whose defects have been corrected.

It has been estimated that there are 100,000 children now in the schools in the United States who will die of tuberculosis before they are 18 years of age. If each child had 6 years schooling, the aggregate of wasted education would be \$1,000,000 yearly for the 7,000 children dying annually. This sum of money if expended for medical inspection would vitally decrease the tuberculosis death rate and would create large economic savings through the lowered mortality and through the decreased impairment of the educational investment by other diseases and death.

The net worth of a child 5 years old according to Dr. Irving Fisher is \$950 whereas his value at the age of 10 years is \$2,000. This increase in economic value to the community represents in brief a type of economic benefit from prolonging the life of children and protecting them throughout school years. Medical inspection cannot of itself save a single child but it points out the way.

Money estimates of the value of medical inspection are sometimes misleading, therefore, it is needless to discuss its statistical ramifications. The relief of human misery; the prevention of contagious diseases; the correction and prevention of physical defects; the lessening of absences and retardation; the decrease in truancy; the lessening of criminality; the increase of industrial efficiency; the general education as to the value of health; the heightening of parental responsibility; and the improvement of home hygiene, all represent better evidences of the value of medical inspection as a community investment.

In the words of Hogarth, "The economic gain that will follow from improved health conditions and enhanced educational results will far outweigh the infinitesimal cost of systematic medical inspection." Improved health, heightened intelligence and increased productive capacity will characterize our future citizens as the result of this communal investment.

EL ANTI-ALCOHOLISMO Y LA ENSEÑANZA PÚBLICA

La Lucha por la Escuela y el Movimiento en la América Latina

(Extracto)

POR

ANTONIO VIDAL Y CARLOS ROBERTSON

El activo movimiento desde largos años producido en el mundo civilizado para oponerse á los estragos del alcoholismo, hállase en vías de adquirir grado é importancia considerables en algunos pueblos Latinos Americanos. Ellos con la progresiva ascensión de su cultura, advierten la amenaza que para su desarrollo y porvenir representa el terrible enemigo. Y, consiguientemente, se aprestan á la lucha, planteandola con firmeza que empieza á dar resultados.

En algunas poblaciones hispano-americanas, á virtud de razones particulares, de circunstancias y causales propias, el alcoholismo, denota realmente graves caracteres; la enfermedad social manifiéstase con razgos por demás acentuados. En otras, el mal no acusa felizmente proporciones mayores: tal suced en casi todos los nucleos urbanos principalmente, que pueblan la República Argentina. No obstante en todas esas sociedades, sin excepción, se hace necesario poner en juego los recursos capeces de neutralizar el flagelo, de detener su avance por lo menos.

En la Republica Argentina, hasta muy poco, el movimiento defensivo, si bien apreciable y ofreciendo mas de una manifestación digna de nota, no se mostraba con caracteres proporcionados á los adelantos científicos y sociales de la comunidad. Habíanse hecho por cierto aisladamente, estudios de merito y proyectado asimismo medidas de gobierno y legislativas; se fundaban "Ligas" que, si bien de poca eficacia como suelen de ordinario ser, venian preparando el ambiente para otras decisiones; se ensayaba también, no siempre con suerte, plantear la lucha en el domino de la escuela; hacíase todo esto, en combinación con iniciativas sociales de distinto orden, mas con resultados insuficientes. Faltaba actuar con eficacia mayor sobre el espíritu público, esclareciendolo, agitando; y, por éste, ya animado sobre los elementos directivos.

En la actualidad, una fuerte reacción está operándose. Buena parte de ella debe serle atribuida á la sociedad de higiene pública de la ciudad de Buenos Aires; la cual viene susitando una fuerte impulsión en favor de los estudios científico-sociales que la magna cuestión implica

y de las medidas é impulsiones que reclama. Es así como en los últimos tiempos, hanse abordado ante dicha asociación; las fases diversas del asunto: fisiológica y psicológica-medical y psiquiátrica; fiscal, económica é industrial; legislativa, educacional, social.

Tan acentuada valía alcanzaron los estudios promovidos en el anterior y en el corriente año, que se ha sentido de modo general la conveniencia de proseguirlos, intensificándolos y metodizándolos. De ésto, y de la trascendencia lograda por el movimiento—el cual, salvando la frontera argentina, interesaba á Chile, Uruguay, Brasil, Perú, etc.—surgió naturalmente la idea de realizar una Conferencia ó *Congreso Americano contra el Alcoholismo*, proyectado bajo un plan especial. En tal Congreso, cuya próxima realización puede estimarse segura, serán ventiladas á la luz hechos, antecedentes y circunstancias locales, de cada país, las decisiones de caracter general y particular.

El anti-alcoholismo en su aspecto pedagógico, ó mejor, educacional, fué y sigue siendo el más favorecido entre dichos estudios de la Sociedad de Higiene. Uno de nosotros habiendo recogido antecedentes y personalmente observado en países europeos la efectuación de la enseñanza anti-alcoholica, quiso contribuir con su esfuerzo al examen de esa faz del asunto. No podríamos detenernos aquí á considerar las ventajas conseguidas aquí y allá por este genero de educación; ni los errores é inconvenientes ya comprobados. Tampoco intentaremos el examen critico de ciertos puntos controvertibles.

De modo general, en lo que no coincidimos, nos separamos poco de las apreciaciones críticas que contienen los ultimos trabajos de Loiseau, Riemain, Cheysson, Pissavy, Haehnel, Quensel, Froelich, y singularmente, el instructivo relatorio de Hagelin, presentado á la ultima sesión de este Congreso (Paris, 1910).

Pero, deseamos sí señalar expresa y netamente, el relativo retardo con que, de manera casi general, manifiéstase el progreso de la Educación Anti-alcoholica. Un examen despasionado permite comprobar que subsisten, hasta en países muy adelantados en materia de instrucción pública, deficiencias y errores de antiguo comprobados.

Prueba ello una vez más la distancia que media, en cuestiones así complejas, entre lo concebido y lo ejecutado. Brevemente una serena observación permite comprobar, cuando es dirigida hacia un conjunto escolar de consideración, que á la instrucción de que tratamos faltale mucho para poseer la regularidad, la extensión, la eficacia deseable. Unas veces no reposa en suficiente base demostrativa ó concreta; otras por el contrario, contiene de estos componentes cantidad mayor que la adoptable á la capacidad, y á las disposiciones psíquicas del niño. Sobre todo, compruébase que estas disposiciones psíquicas, apenas si son consultadas; de donde, transmisión inadecuada. La "lección," por lo

demás, suele no ser más que una serie de "nociones" (con frecuencia alteradas ó deficientes), presentadas sin calor ni animación, desvinculadas de toda emoción, sin tocar la fuente de sentimientos alguno; sin poder educativo por consiguiente. Añádase que la "acción," que la "conduta" no suelen constituir, como fuera preciso, el objetivo primero del esfuerzo; y que el "ejemplo" personal, vivo, lo que más mueve, lo que más inhibe, ni figura casi entre los recursos usuales, y se comprenderá porque flaquean los resultados.

Más todavía: considerada la instrucción anti-alcoholica en su solo aspecto intelectual, es frecuente verificar su pobreza, como que procediera de escasa base informativa. La noción sencilla pero justa, fácil, asimilable, derivada por "simplificación" de rica fuente, no es abundante ahí en la aptitud del enseñante, radica la dificultad más seria con que en la practica se tropieza. Y, no contamos todavía las dificultades que en una vasta organización pedagógica se refieren á la uniformidad del método, á la justeza de medios y recursos.

No hay duda que es por lo comun la acción conjunta de muchos de estos factores, apenas indicados aquí en su naturaleza, que da origen á los resultados escasos ó nulos de la enseñanza anti-alcoholica, aquí allá revelados. Más: el resultado contrario, también señalado en los últimos años. Dondequiera esta última verificación pueda ser positivamente hecha ó inferida tan solo, es de obligación, pensamos, detenerse y aun retrotraer las cosas á su primitiva situación. Pues, anti-alcoholismo hace parte de un grupo de enseñanzas que, si no alcanzan calidades de cierto grado y no llenan condiciones determinadas, es preferible hacer de ellas prescindencia. Aquí, más que en otras cosas, la primera indicación es no dañar. Ya que no nos sea dado entrar aquí en otros desarrollos del vasto tema, limitamosnos á resumir nuestros juicios con respecto á la situación actual del problema, encarado de modo general.

Resumen: La Educación Anti-Alcoholica. Su Estado Actual.

1. Acúsase en la actualidad una detención relativa, si no absoluta en el progreso de esta instrucción. Si es verdad que hoy se ha impuesto á todos los espíritus la necesidad de que la escuela tome parte activa en la lucha contra el alcohol; si es positivo también que tal decisión se halla al presente incorporada de hecho á las prácticas pedagógicas de casi todos los países, no es menos cierto, que los beneficios obtenidos parecen no acreer, ó solo en terminos proporcionalmente pequeños.

2. *Factores de ineficacia:* fugacidad, discontinuidad de la instrucción; aplicación parcial, incompleta; falta de medios; objetivación

insuficiente, ó por el contrario, excesiva ó inadecuada; (impropiedad ético-pedagógica de ciertas demostraciones); imperfecta posesión de la naturaleza psíquica del niño; inco-ordinación de las iniciativas y prácticas, etc.

3. En tres categorías puédense clasificar los factores causales del retardo sufrido por la educación anti-alcoholica, constituyendose otros tantos modos de insuficiencia:

a) Insuficiencia de base, en cuanto al contenido de la transmisión; dificultades nacidas de la falta de aptitudes de los enseñantes y de su limitada información científica;

b) Insuficiencia en los procedimientos, en el método, originado principalmente del estrecho conocimiento de las condiciones psicológicas que harían suficiente la acción educadora (ó aplicación imperfecta, con ó sin el debido conocimiento);

c) Insuficiencia en cuanto á la acción directiva (si de conjuntos de relativa importancia se trata): ajuste de medios, uniformidad de acción; disciplina y organización;

4. La acumulación la acción combinada, en modos varios de estos factores adversos que es preciso conocer uno á uno á fin de corregirlos convenientemente-vienen produciendo el descreimiento respecto al valor educativo de las nociones que hacen el fondo del anti-alcoholismo. Y hasta más, han originado un principio de crisis, hasta hoy más bien local.

De modo general, allí donde no se cuente con medios probados en los sistemas nuevos, en pleno crecimiento, particularmente, es menester guardarse de provocar una generalización temprana. Antes bien, conviene proceder mediante extensión y perfeccionamientos progresivos.

5. *La educación anti-alcoholica* (cuando se trata de un sistema pedagógico), necesita en vista de una acción directiva eficaz, ser unificada, coordinada, en punto á procedimientos y medios. Ella debe además armonizar con las iniciativas sociales, con las impulsiones que obran fuera de la escuela. El anti-alcoholismo en la enseñanza publica, no es sino una parte, importantísima es verdad de la obra general, de la obra social.

Ahora, para terminar, los autores de acuerdo con la primera parte de esta exposición, que se refiere á la situación en, el particular, de los países Latino-Americanos, proponen, para ser considerada en la proxima

(V) asamblea del Congreso Internacional de Higiene Escolar, la sanción que sigue, importando:

1. Propiciar el movimiento científico y social producido ultimamente en algunos países Latino-Americanos, conducente á la represión del alcoholismo dentro y fuera del campo de la Escuela; del cual movimiento es signo y ejemplo el que ha iniciado y mantiene la "Sociedad Argentina de Higiene Pública" (Buenos Aires).

2. Propiciar asimismo la iniciativa tomada por esta última asociación en el sentido de convocar en América una Conferencia internacional de anti-alcoholismo: según un plan especial de acuerdo con la situación y las condiciones propias de estos países. Un punto capital de esta conferencia será la adopción de medios que permitan en materia de anti-alcoholismo incorporar á la enseñanza pública de las naciones hispano-americanas, las realizaciones felices obtenidas en otras partes muy particularmente por la escuela americana (E. U.).

ANTI-ALCOHOLISM AND THE PUBLIC EDUCATION

The Struggle for the School and the Movement in Latin-America

BY

ANTONIO VIDAL AND CHARLES ROBERTSON

ARGENTINE DELEGATES

The active movement of the civilized world during years to combat the effects of alcoholism, is now active and progressive in several of the Latin-American countries. They are prepared to fight against this social evil with firmness, which thus far has given the best of results. In some of the Spanish-American countries, due to very special reasons, the alcoholism is denoting characteristics of very grave concern, the increase of victims is noticeable.

In some of the republics, however, the plague is found in a reduced measure, this being so in the Argentine Republic. Notwithstanding this fact, it is necessary to check the social disease.

Till very recently in the Argentine Republic the defensive movement, while laudable, was not in accord with the scientific and social standards of the community.

Several "Leagues Against Alcoholism" have been established, preparing the field for official action. A trial was also made to fight alcoholism in the schools, combined with other social initiatives, but the results have not been very satisfactory. It became necessary to influence the public mind, to instruct, to agitate, and enforce directive elements. At the present time a strong and favorable reaction is felt, chiefly due to the activities of the Association of Public Hygiene of the city of Buenos Aires. This association brought into action scientific and social methods, applied to the various scientific, industrial, legislative, educational and social fields.

The results obtained during the last and present year have been most gratifying, and the methods employed thus far will be continued, will be intensified, and methodized.

The movement within the Argentine frontier, called the attention of the other South American republics: Chile, Uruguay, Brazil, Peru, etc., and it was decided to celebrate in the near future "An American Congress Against Alcoholism," to be conducted on a special plan. During the said Congress local circumstances, and features of the respective countries will be debated, and general resolutions will be adopted.

The anti-alcoholic movement in its pedagogic aspect always was, and always will be favored by the Association of Public Hygiene. One

of us has investigated, and observed personally the various educational efforts of Europe, and wish, therefore, to contribute towards the development of the pedagogic feature of the issue. It would be impossible, however, to state here, and in detail, the investigations made, and the informations obtained in this connection, or to point out the possible errors, and the disputable features. Our observations are similar to those of Loiseau, Riemain, Cheysson, Pissavy, Hachnel, Quensel, Froelich, and especially in accord with the very instructive report of "Hagelin" presented at the Congress of Paris in 1910.

We wish, however, to express the relative delay, the general retard, shown in the progress of the educational movement against alcoholism.

An impartial investigation would prove some errors and lack of efficiency, even in the more advanced countries, proving the distance between the conceivable, not as yet materialized, and the results obtained. Keen observations will also confirm that much remains to be accomplished, that a very desirable regularity and efficiency must be obtained within the limits of public education. The "lessons" on the subject are nothing but a series of notions, of little or no interest, lacking emotions and necessary sentiments, and without instructive power.

Adding thereto that the "action" and the "conduct" do not constitute the primary object of the effort, and the "personal example" does not figure among the usual factors employed, hence the lack of results. Moreover, considering the anti-alcoholic instruction from an intellectual point of view, its poverty or feebleness, short of information is frequently observed.

Anti-alcoholism is forming part of a group of instruction, and if high standards, certain conditions and results are not obtained, it would be better not to apply it at all.

In view of the fact that we cannot enter into all the details of this vast problem, we are obliged to limit ourselves to our personal appreciations, in a general way.

In Short, the Anti-Alcoholic Education—Its Present Stage and Its Condition in General:

I. A relative delay is at present observed in the progress of the educational feature. It is very true that the public spirit has felt the necessity that the school should take an active part in the struggle against alcoholism, it is also a fact that it is forming a part of practical pedagogic, yet it is also true that the results and benefits obtained do not seem to increase accordingly.

2. The inefficient factors: Fugacity, discontinued instruction (lack of constancy), partial application, incompleteness, lack of elements, insufficient objectiveness, imperfect knowledge of the psychologic nature of children, in co-ordination of the initiative and methods.

3. The factors having caused the delay referred to above can be divided into three classes:

(a) Insufficient basis, difficulties arising from the lack of knowledge of the teachers, and the limited scientific information.

(b) Insufficiency in the proceedings, in the methods, limited knowledge of the psychological conditions necessary for the educational action.

(c) Insufficiency in the directive action, adjustment of the elements uniformity of the action, discipline and organization.

4. The accumulation, the combined action of these adverse factors, each of which must be well known in order to correct them, otherwise the educational notions forming part of anti-alcoholism will be reduced.

5. The anti-alcoholic education (as forming part of a pedagogic system), if a directive and effective action is desired, must be unified, co-ordinated, both its methods and its elements. And it must be in accord and harmonize with other social initiatives and with the impulsive work outside the school. Because the anti-alcoholic movement, and the educational work thereto attached, is part of the general social work and activities.

The authors of this modest contribution, referring principally to the Latin-American countries, hereby beg to propose the following sanction to be considered by the forthcoming Fifth International Congress on School Hygiene:

1. To propitiate the scientific and social movement produced of late in some of the Latin-American republics, and this in order to check the evil of alcoholism within and outside the field of the school, following the example and initiative of the Association of Public Hygiene of the city of Buenos Aires.

2. Also to propitiate the initiative of the said association, to call "An American Congress Against Alcoholism." One of the chief issues of this forthcoming Congress to be, to incorporate in the educational system of the various Spanish-American countries, the successful methods employed by the school system of the United States.

THE MEDICAL SUPERVISION OF THE CHILD BETWEEN INFANCY AND SCHOOL AGE

BY

HENRY L. K. SHAW

The source of many physical and mental defects of school children can be traced to disturbances arising during the first five years of life. Early infancy is now receiving more medical, supervisory, and philanthropic care than ever before, owing to the inception of the movement against infant mortality. As a result, the mortality and morbidity during the first year of life has undergone a remarkable reduction. After the fifth year the child goes under systematic medical inspection when he enters school and passes from the narrow confines of family life to the wider scope of school and social life. There is left, therefore, a wide gap in the medical supervision of the young child between the first and fifth year. This period of early childhood is the most important and the most neglected one in the child's life. During this time the child learns to walk and to talk, the milk teeth appear, and there is a rapid growth in weight and height, and the brain develops with great rapidity. It has been said that the child learns more in the first five years than in the rest of its life. Certain diseases are more apt to appear during this period, and being forewarned one should be forearmed. The creeping of the child on dirty floors, with the inborn tendency to place everything in its mouth, produce numerous mouth and throat diseases, contagious affections of the skin and mucous membranes, diphtheria, whooping cough, worms, tuberculosis, etc. Changes in the structure of the bones, the result of improper and insufficient nutrition, are manifested by curvatures of the spine, chest and extremities. Defects in the normal development of the brain are recognized by delayed intelligence, locomotion or speech.

Dr. Kerr has called attention to the untouched reservoirs of disease during this period. Dr. Forsyth has been making for several years past a systematic medical examination of children under school age in the Westminster district of London, and finds that there is a rapid rise in the tide of disease with each year of life. The majority of children examined at the end of the first year were found to be healthy, but only a very few came through to their fifth year without at least one physical defect of some kind or other. Of 374 children under observation, 332 presented physical defects. 64% of the four-year-old children

had dental caries; a condition which is probably responsible for more ill health in children than any other one cause.

Oliver Wendell Holmes once said that "Children in order to be strong and robust should choose healthy grandparents." Prenatal influences and heredity play a large part in the problem before us and it is a most encouraging sign that such wide-spread interest is now taken regarding eugenics. All efforts to improve our race and produce better babies should be encouraged.

More important than the influences of heredity or eugenics are the effects of environment or eugenics on the period of early childhood. Most of the disorders are the direct result of ignorance. Ignorance on the part of the parents in feeding, clothing, training and treating their children. Ignorance on the part of many physicians, who not realizing the great importance of this period of plasticity and susceptibility to disease, become careless in their examination. It is a very difficult thing to make a thorough physical examination of a young child who resists every approach and is terror stricken by the close presence of a stranger. Serious and preventable ailments are often overlooked or are loosely diagnosed as teething or worms. Ignorance on the part of the dentist is responsible for unnecessary removal of teeth and the spread of dental caries. Very few dentists, unfortunately, appreciate the necessity of filling small cavities in the milk teeth. It requires tact, skill, and patience to fill the teeth of a young child but it can be done and should be done. Extraction should be the last resort. Intelligent treatment of the milk teeth by the dentist would prevent much sickness and subsequent deformity of the jaws.

The nervous child is perhaps a product of our present day civilization. Nervous parents nowadays are not the exception but the rule and their offspring usually exhibit the same characteristics very early in life. The neurotic temperament has been defined as "a disposition in which the emotions are easily kindled and are controlled and restrained imperfectly or with difficulty." This neurotic disposition may or may not be inherited but there is no question as to the effect of highly-strung emotional, and over-anxious parents on a child during these early years of development. The environment of the nervous child, as well as his personality, should always be considered in relation to his ailment. Instead of saying, "Like father, like son," it should rather be said, "As the father lives, so lives the son." Under proper surroundings and tactful supervision these nervous tendencies can be held in check, and it is a sad commentary upon our alleged improved methods of child care and training that nervous exhaustion in young children is becoming more frequent. This is produced by insufficient sleep, late bed hours

with no daytime nap, improper nourishment, intemperate play, and uncontrolled temper.

The highest duty of the parent, educator, and physician is to maintain the health of these children at its highest level and to intelligently train and direct their minds.

The question of when to send the child to school is of importance in this connection. Not when he should commence his education, for that should be started very early in life, but when should he begin school. Compulsory education in England begins at five, in Germany at six, and in France at seven, while in the United States the average might be placed at six years.

Mr. Winch, Inspector of Schools for the London County Council, made a careful investigation into this question from the standpoint of a psychologist, not a physician. There is a feeling among some educationalists that the more teaching the child gets and the sooner he begins school, the more progress he is sure to make, while on the other side there is a growing sentiment that the attendance in school, in England at least, begins too early and that there is an educational disadvantage in commencing too soon. Mr. Winch came to the conclusion that the entrance age from three to five years conferred no intellectual advantage on the child either in his school work or in his subsequent progress in later life and further that no advantage appeared to exist in early entry so far as the subsequent attainment of good behavior and the development of attentiveness were concerned. It would seem that there was no educational advantage in sending children to school before the age of five so the sole consideration is the health of the child.

Dr. Isaac A. Abt of Chicago, who made a very careful inquiry into the status of the kindergarten, concluded that each child should be considered as an individual and that the kindergarten is not necessary for all children and is not suitable for some. In other words, the desirability of the kindergarten depends upon the state of health of the child, the qualifications of the teacher, the disposition and capacity of the mother, the environment of the home, and the equipment of the kindergarten. This question of sending children to school before the age of six is dependent upon the social conditions surrounding the child. If the child can have outdoor life and individual care and proper attention at home, there is no question but that home is the best place. On the other hand, there are a large number of children in every city for whom early schooling is a Godsend—children who go from squalor and filth and dirt and bad air to well-ventilated rooms to be taught how to play, the necessity for keeping themselves clean, and the rudiments of living. Provision should be made for children of this type in the public schools situated in the crowded districts of our cities. These children would

receive careful medical inspection and supervision and many physical defects and ailments could be remedied before the serious work of school commenced.

Dr. W. Leslie MacKenzie, who is the Medical Health Officer of Scotland, advocates the establishment of what he terms "nursery schools." These are a combination of the day nursery and kindergarten. The children are allowed to play under the guidance of a trained teacher and are allowed to take a nap in cribs specially provided for this purpose when they seem tired or sleepy. At this age he insists "that it is not 'discipline' that the child needs, nor 'teaching;' it is watching, understanding, sympathetic intuition, lines of directive play, exploitation of infant spontaneity, and superintendence of growth." The child needs appreciation at this period of life and it is the teacher that needs restraint. The school nurse has the opportunity of visiting the homes of these children and would be able to report to the proper medical authorities on the physical condition of the children and the sanitary state of the homes.

The local Health Officer should be given authority to inspect the home and improve any necessary hygienic and sanitary conditions and to educate and instruct parents regarding the life and health and nourishment of the child. The State has already assumed the oversight and the care of the children on reaching school age and has placed upon the municipal authorities the responsibility for the care and treatment of those found mentally deficient or diseased. This oversight could extend to the earlier years of life so as to prevent many of the defects both mental and physical which are first recognized and treated during school age. This would be the highest of all preventive work and would save much unnecessary suffering.

Our greatest weapon to overcome the ignorance of the parents, physicians, and dentists is education. Parents of the poor and ignorant classes can be reached through the visiting nurse and the Health Physician. For this class of people in some of our cities a number of philanthropic agencies have reached into the homes of these people and have accomplished good results in educating people by direct, personal instruction in the elements of hygiene. Dr. Josephine Baker instituted Little Mothers' Leagues among the public school children of New York City and reaches the ignorant parents by means of the children who are instructed at the schools in the care of children and in the importance of personal and family hygiene. More intelligent parents can be reached by suitable literature and by popular lectures. The public schools could be used for lectures to parents on the care of children, the importance of proper diet, the care of the first teeth, etc.

Medical men should be made to realize the importance of this period

in the child's life and should be able to give proper advice as to the maintenance of health in young children. More attention should be paid to this matter in our Medical Colleges and young doctors should start in their professional careers with a knowledge of the nutritional demands and the physical characteristics of early childhood. They should also receive instruction regarding the recognition and treatment of the deficient or the backward child. The dentists should realize that they have a responsibility in the health of young children and should be taught that it is far better to fill a milk tooth than to remove it. Parents who are wise should have their children's teeth inspected periodically and they should receive intelligent attention and instruction in dental and oral hygiene from the dentist.

In order, therefore, to solve the problem of the health of children under school age a campaign of education should be inaugurated and means should be devised for the medical supervision of young children and of their homes.

HEALTH STATISTICS OF PUBLIC SCHOOL CHILDREN OF WASHINGTON, D. C., WITH SPECIAL REFER- ENCE TO GRADE, SEX AND ENVIRONMENT

BY

REBECCA STONEROAD

The Committee on Public Health of the District of Columbia Medical Society, desiring to ascertain the condition of health of the public school children of Washington, D. C., prepared a list of thirty-five questions bearing upon the health of children, to be answered by the teachers. This committee was enlarged to over one hundred and a physician assigned to each school building, to visit the school, make examinations and assist in obtaining the information. When necessary, the parents and family physician were consulted.

The questions asked were those of the medical man for general information, rather than of the specialist, and were intended to show the necessity for medical inspection in our schools which was introduced four years later. The questions included the age, height, weight, chest and hip measurements; the pulse and respiration; defective eyesight, defective hearing and defective speech; tuberculosis; the appearance, whether frail, sickly and nervous, or healthy and robust; poor appetite; sleep, whether insufficient or disturbed; headache, occasional or frequent; backache, occasional or frequent, also nosebleed and cough; the contagious diseases of diphtheria, scarlet fever, measles and whooping cough; the age at which menstruation began and whether painful or irregular.

Each teacher in the District of Columbia reported upon 10 children in her class—5 boys and 5 girls, who were chosen by lot. Records were taken in the fall of the year from September 27th to October 11th, 1899. Printed blanks containing the questions were prepared, one for each child, to be filled by the teacher. Printed instructions were issued for carrying on the work. Since medical inspection was introduced later, these records have never been published.

In order that these valuable local statistics may not be entirely lost, I have undertaken the computation for two widely separated districts of the city representing the greatest difference in social conditions, the poor and the well-to-do, so as to get a truer average for the city as well as to note what difference, if any, may be associated with environment. The number of examinations tabulated is 1310. The records made were

entirely of white children. I present the result merely as a contribution to what has already been done along this line, and as facts for future study.

In order that the statistics may have the greatest significance, they have also been arranged by grades, as well as sex. It was decided to keep the age for the school grade in years and twelfths, so that in comparing with examiners who have adopted the age group represented by the last birthday, or the age group represented by the nearest birthday, in either case a transition could readily be made.

TABLE I.
PER CENT. BY SEXES.

	Boys	Per Cent	Girls	Per Cent
Number examined.....	655	....	655	....
Defective eyesight.....	94	14.3	148	22.5
Defective hearing.....	48	7.3	41	6.2
Defective speech.....	25	3.8	12	1.8
Other perceptible mental or body defects.....	27	4.1	15	2.2
Appetite poor.....	50	7.6	86	13.1
Sleep, insufficient or disturbed.....	40	6.1	72	10.9
Headache, occasional.....	143	21.8	173	26.4
Headache, frequent.....	49	7.4	104	15.8
Nosebleed, occasional.....	82	12.5	75	11.4
Nosebleed, frequent.....	13	1.9	20	3.0
Cough, occasional.....	114	17.4	95	14.5
Cough, frequent.....	25	3.8	20	3.0
Backache, occasional.....	17	2.5	53	8.0
Backache, frequent.....	5	.7	15	2.2
Has had diphtheria.....	56	8.5	67	10.2
Has had scarlet fever.....	104	15.8	89	13.5
Has had measles.....	493	75.2	526	80.3
Has had whooping cough.....	378	57.7	444	67.7
Healthy or robust in appearance.....	509	77.7	475	72.5
Frail, sickly or nervous in appearance.....	146	22.2	180	27.4
Has tuberculosis.....	5	.7	5	.7

Comparison of Sex.

Comparison of the entire number by sex shows that the girls had a much higher per cent. of defective eyesight, being 22 per cent., while that of the boys was 14 per cent.; yet the boys slightly exceeded the girls in defective hearing which was 7 per cent. as compared with 6 per cent. for the girls; also in defective speech, being 3 per cent. for the

boys and 1 per cent. for the girls, and in other perceptible defects the per cent. was 4 for the boys and 2 for the girls.

The girls suffered more from headache, disturbed sleep, poor appetite, backache and nosebleed while boys had more frequent cough and the occasional nosebleed. 27 per cent. of the girls were frail, sickly, or nervous in appearance as compared with 22 per cent. of the boys. Girls showed a greater susceptibility to contagious diseases, 80 per cent. having had measles, boys 75 per cent.; 67 per cent. whooping cough, boys 57 per cent.; and 10 per cent. diphtheria, boys 8 per cent. In scarlet fever boys exceeded the girls, the girls showing 13 per cent. and the boys 15 per cent.

Tuberculosis was the same in each sex, being 7.10 per cent.

It would seem that the main defects of boys are due probably to accident and exposure, while the girls present the greater number of disorders of nerves and nutrition.

TABLE II.
PER CENT. BY SEX IN POOR DISTRICT.

	Boys	Per Cent	Girls	Per Cent
Number examined.....	305	....	305	....
Defective eyesight.....	52	17.0	71	23.2
Defective hearing.....	30	9.8	26	8.5
Defective speech.....	12	3.9	3	.9
Other perceptible mental or body defects.....	11	3.6	7	2.2
Appetite poor.....	24	7.8	35	11.4
Sleep, insufficient or disturbed.....	28	9.1	38	12.4
Headache, occasional.....	82	26.8	85	27.8
Headache, frequent.....	28	9.1	45	14.7
Nosebleed, occasional.....	53	17.3	41	13.4
Nosebleed, frequent.....	9	2.9	10	3.2
Cough, occasional.....	72	23.6	61	20.0
Cough, frequent.....	20	6.5	11	3.6
Backache, occasional.....	8	2.6	25	8.1
Backache, frequent.....	3	.9	5	1.6
Has had diphtheria.....	20	6.5	30	9.8
Has had scarlet fever.....	40	13.1	38	12.4
Has had measles.....	218	71.4	251	82.2
Has had whooping cough.....	173	56.7	213	69.8
Healthy or robust in appearance.....	239	78.3	231	75.7
Frail, sickly or nervous in appearance.....	66	21.6	74	24.2
Painful menstruation.....	..	....	9	26.4
Irregular menstruation.....	..	....	6	17.6
Age when menstruation first began.....	..	....	34	13 $\frac{6}{12}$ yrs.

TABLE III.
PER CENT. BY SEX IN WELL-TO-DO DISTRICT.

	Boys	Per Cent	Girls	Per Cent
Number examined.....	350	....	350	....
Defective eyesight.....	42	12.0	77	22.
Defective hearing.....	18	5.1	15	4.2
Defective speech.....	13	3.7	9	2.5
Other perceptible mental or body defects.....	16	4.5	8	2.2
Appetite poor.....	26	7.4	51	14.5
Sleep, insufficient or disturbed.....	12	3.4	34	9.7
Headache, occasional.....	61	17.4	88	25.1
Headache, frequent.....	21	6.0	59	16.8
Nosebleed, occasional.....	29	8.2	34	9.7
Nosebleed, frequent.....	4	1.1	10	2.8
Cough, occasional.....	42	12.0	34	9.7
Cough, frequent.....	5	1.4	9	2.5
Backache, occasional.....	9	2.5	28	8.0
Backache, frequent.....	2	.5	10	2.8
Has had diphtheria.....	36	10.2	37	10.5
Has had scarlet fever.....	64	18.2	51	14.5
Has had measles.....	275	78.5	275	78.5
Has had whooping cough.....	205	58.5	231	66.0
Healthy or robust in appearance.....	270	77.2	244	69.8
Frail, sickly or nervous in appearance.....	80	22.8	106	30.2
Painful menstruation.....	..	....	7	12.7
Irregular menstruation.....	..	....	13	23.6
Age when menstruation first began.....	..	....	55	131 ⁸ / ₂ yrs.

Comparison of Poor and Well-to-Do.

Both boys and girls in the poor district showed a higher per cent. of defective eyesight, defective hearing, disturbed sleep, nosebleed, cough, occasional headache and occasional backache. Boys in the same district showed a slightly higher per cent. of defective speech, poor appetite, frequent headache and frequent backache as compared with boys in the better district.

Children in the well-to-do district seem to have suffered more from the contagious diseases of diphtheria, scarlet fever, measles and whooping cough.

The girls in the well-to-do district exceeded the others in poor appetite, frequent headache, frequent backache and defective speech. Of

these girls 30 per cent. appeared frail, sickly or nervous as compared with 24 per cent. of girls in the congested district.

In the poor district the age at which menstruation began was 13, 6-12 years, being three months later than girls in the better district. A greater number reported pain at that time. The better district reported more irregularity.

TABLE IV.—HEALTHY AND ROBUST IN APPEARANCE.

PER CENT. BY SEX, AGE AND GRADES.

BOYS.

Grades.....	I	II	III	IV	V	VI	VII	VIII
Age.....	7	8, 3-12	9, 5-12	10, 1-12	11, 1-12	12, 7-12	13, 10-12	14, 8-12
No. exam.....	95	90	90	85	80	80	70	65
Boys.....	73	71	70	60	65	58	55	57
Per Cent.....	76.8	78.8	77.7	70.5	81.2	72.5	78.5	87.6

GIRLS.

Grades.....	I	II	III	IV	V	VI	VII	VIII
Age.....	6, 9-12	7, 9-12	9, 4-12	9, 9-12	11, 4-12	12, 8-12	13, 9-12	14, 10-12
No. exam.....	95	90	90	85	80	80	70	65
Girls.....	73	69	65	53	60	54	51	50
Per Cent.....	76.8	76.6	72.2	62.3	75	67.5	72.8	76.9

At the age of 7 the table shows 76 per cent. of the boys and the same per cent. of the girls appeared to be healthy and robust. At about the age of 10 there was a falling off in the boys to 70 per cent. with a recovery during the two following years when a considerable drop again appeared, with a final rise to 87 per cent. in the 15th year.

The girls beginning with 76 per cent. began to decrease in healthy appearance at about the age of 9, one year earlier than the boys, and at the age of 10 dropped to 62 per cent., somewhat lower than the boys. There was a good recovery at the age of 11, dropping again at the age of 13, with a final recovery in the 15th year.

TABLE V.
PER CENT. BY GRADE, AGE AND SEX.

Boys.

Grade.....	I		II		III		IV		V		VI		VII		VIII	
Age.....	7		8, 3-12		9, 5-12		10, 1-12		11, 1-12		12, 7-12		13, 10-12		14, 8-12	
	Boys	Per Cent	Boys	Per Cent	Boys	Per Cent	Boys	Per Cent	Boys	Per Cent	Boys	Per Cent	Boys	Per Cent	Boys	Per Cent
Number examined.....	95	...	90	...	90	...	85	...	80	...	80	...	70	...	65	...
Defective eyesight.....	2	2.1	12	13.3	9	10.0	19	22.3	20	25.0	12	15.0	13	18.5	7	10.7
Defective hearing.....	5	5.2	8	8.8	13	14.4	6	7.0	4	5.0	5	6.2	2	2.8	5	7.6
Defective speech.....	5	5.2	6	6.6	5	5.5	3	3.5	4	5.0	2	2.5	0	0	0	0
Other perceptible body defects.....	6	6.3	3	3.3	2	2.2	1	1.1	4	5.0	7	8.7	3	4.2	1	1.5
Appetite poor.....	6	6.3	7	7.7	8	8.8	9	10.5	8	10.0	5	6.2	4	5.7	3	4.6
Sleep, insufficient or disturbed.....	7	7.3	5	5.5	7	7.7	5	5.8	6	6.5	4	5.0	4	5.7	2	3.0
Headache, occasional.....	10	10.0	11	12.2	24	26.6	21	24.7	16	20.0	21	26.2	20	28.5	19	29.2
Headache, frequent.....	2	2.1	5	5.5	9	10.0	8	9.40	10	12.5	8	10.0	4	5.7	3	4.6
Nosebleed, occasional.....	15	15.7	7	7.7	13	14.4	12	14.1	9	11.2	9	11.2	11	15.7	6	9.2
Nosebleed, frequent.....	1	1.0	1	1.1	2	2.2	3	3.5	2	2.5	4	5.0	1	1.4	0	0
Cough, occasional.....	20	21.0	11	12.2	18	20.0	17	20.0	16	20.0	13	16.2	10	14.2	9	13.8
Cough, frequent.....	2	2.1	6	6.6	2	2.2	5	5.8	2	2.5	1	1.2	3	4.2	2	3.0
Backache, occasional.....	0	0.0	1	1.1	4	4.4	2	2.3	4	5.0	3	3.7	1	1.4	2	3.0
Backache, frequent.....	0	0.0	0	0.0	0	0.0	1	1.1	2	2.5	0	0	1	1.4	1	1.5
Has had diphtheria.....	12	12.6	5	5.5	9	10.0	4	4.7	7	8.7	8	10	11	15.7	7	10.7
Has had scarlet fever.....	8	8.4	9	10.0	15	16.6	4	4.7	12	15.0	14	17.5	17	24.2	10	15.3
Has had measles.....	48	50.0	61	67.7	69	76.6	74	87.5	63	78.7	68	85	56	80	54	83.0
Has had whooping cough	44	46.3	46	51.1	57	63.3	53	62.3	49	61.2	48	60	38	54.2	43	66.0
Frail, sickly or nervous in appearance.....	22	23.1	19	21.1	20	22.2	25	29.4	15	18.7	22	27.5	15	21.4	8	12.3

TABLE VI.
PER CENT. BY GRADE, AGE AND SEX.
GIRLS.

Grade.	I		II		III		IV		V		VI		VII		VIII	
Age.	Girls	Per Cent	Girls	Per Cent	Girls	Per Cent	Girls	Per Cent	Girls	Per Cent	Girls	Per Cent	Girls	Per Cent	Girls	Per Cent
Number examined.....	95	...	90	...	90	...	85	...	80	...	80	...	70	...	65	...
Defective eyesight.....	5	5.2	10	11.1	20	22.2	36	42.3	29	36.2	16	20.0	20	28.5	12	18.4
Defective hearing.....	5	3.1	3	3.3	3	3.3	10	11.7	8	10.0	7	8.7	3	4.2	4	6.1
Defective speech.....	2	2.1	2	2.2	4	4.4	2	2.3	0	0.0	1	1.2	1	1.4	0	0.0
Other perceptible body defects.....	1	1.1	1	1.1	2	2.2	2	2.3	2	2.5	4	5.0	2	2.8	1	1.5
Appetite poor.....	8	8.4	10	11.1	14	15.5	12	14.1	16	20.0	12	15	8	11.4	6	9.2
Sleep, insufficient or disturbed.....	11	11.5	8	8.8	12	13.3	13	15.2	9	11.2	7	8.7	6	8.5	6	9.2
Headache, occasional.....	20	21.0	12	13.3	25	27.7	19	22.3	23	28.7	34	42.5	23	32.8	17	26.1
Headache, frequent.....	4	4.2	5	5.5	14	15.5	12	14.1	13	16.2	22	27.5	13	21.4	10	15.4
Nosebleed, occasional.....	8	8.4	6	6.6	9	10.0	15	17.6	10	12.5	10	12.5	9	12.8	2	3.0
Nosebleed, frequent.....	0	0.0	1	1.1	5	5.5	6	7.0	2	2.5	2	2.5	3	4.2	1	1.5
Cough, occasional.....	16	16.8	16	17.7	12	13.3	13	15.2	16	20.0	11	13.7	9	12.8	5	7.6
Cough, frequent.....	1	1.1	2	2.2	1	1.1	5	5.8	5	6.2	0	0.0	2	2.8	4	6.1
Backache, occasional.....	4	4.4	0	0.0	6	6.6	9	10.5	3	3.7	0	0.0	11	15.6	11	16.9
Backache, frequent.....	0	0.0	0	0.0	1	1.1	0	0.0	5	6.2	2	2.5	3	4.2	4	6.1
Has had diphtheria.....	5	5.2	7	7.7	14	15.5	10	11.7	3	4.7	13	16.2	12	14.2	5	7.6
Has had scarlet fever.....	8	8.4	8	8.8	10	11.1	18	21.1	8	10.0	13	16.2	12	14.2	12	18.4
Has had measles.....	55	57.8	70	77.7	68	75.5	68	80.0	66	82.5	70	87.5	61	87.1	63	96.8
Has had whooping cough.....	53	55.7	61	64.4	55	58.7	55	64.7	58	72.5	53	66.1	50	84.2	47	72.2
Frail, sickly, nervous.....	22	23.1	21	23.3	25	27.7	32	37.7	20	25.0	20	32.5	19	27.1	15	23.0
Painful menstruation.....	..	...	..	...	..	...	0	0.0	3	3.7	2	2.5	4	5.6	7	10.5
Irregular menstruation.....	..	...	..	...	..	...	1	50.0	0	0.0	5	6.2	5	7.2	6	9.2
Age menstruation first began.....	..	...	..	...	..	...	2	13.4-12 yrs	5	12.8-12 yrs	14	13.3-12 yrs	20	13.6-12 yrs	42	13.4-12 yrs

Tables V and VI show the per cent. by grade, age and sex. The highest degree of sickness as represented by poor appetite, frequent headache, frequent backache, and disturbed sleep was found in the middle grades, the fourth, fifth and sixth, between the ages 9 and 13, after which there was a decided improvement. The percentage decreased as age increased.

This corresponds with the per cent. of those recorded as frail, sickly or nervous in appearance which reached its height in the fourth grade, and again in the sixth grade, being 37 per cent. in the fourth grade for girls about 10 years of age, and 32 per cent. in the sixth grade for girls about 13 years of age. The boys reached the greatest height of 29 per cent. in the fourth grade and 27 per cent. in the sixth grade.

MENSTRUATION.

Number reported.....	89
Age when menstruation first began.....	13 4-12 yrs.
Irregular menstruation.....	21 per cent.
Painful menstruation.....	18 per cent.

Tables VII and VIII show the average height, weight, chest and hip measurements, pulse and respiration by grades, age and sex.

TABLE VII.
AVERAGE BY GRADE, AGE AND SEX.

BOYS.

Grade.....	I	II	III	IV	V	VI	VII	VIII
Number examined.....	95	90	90	85	80	80	70	65
Age of pupils in years and twelfths.....	7	8, 3-12	9, 5-12	10, 1-12	11, 1-12	12, 7-12	13, 10-12	14, 8-12
Height in inches and quarters.....	45.7	48.1	49.8	53.2	54.6	56	58.8	61.1
Weight in pounds and quarters.....	46.2	52.5	57.8	68.2	73.2	75.6	92.7	99.9
Measurement in inches and quarters around largest part of chest.....	23	23.7	24.3	25.8	26.2	26.6	27.9	28.2
Measurement in inches and quarters around chest after deep inspiration...	24.3	25.3	25.8	27.5	27.9	28.6	30.0	31.0
Measurement in inches and quarters around the hips.....	23.7	24.8	25.5	27.2	27.5	28.5	29.4	30.6
Pulse, number of beats per minute.....	89.4	85.8	78.8	83.2	84	81.1	82.4	84.1
Respiration, number per minute.....	24.5	23.9	22.4	23.4	22.2	20	21	19.0

TABLE VIII.

AVERAGE BY GRADE, AGE AND SEX.

GIRLS.

Grade.....	I	II	III	IV	V	VI	VII	VIII
Number examined.....	95	90	90	85	80	80	70	65
Age of pupil in years and twelfths.....	6, 9-12	7, 9-12	9, 4-12	9, 9-12	11, 4-12	12, 8-12	13, 9-12	14, 10-12
Height in inches and quarters.....	44.1	46.7	49.5	51	54.8	57	59.5	61.4
Weight in pounds and quarters.....	43.4	48	57.3	62.6	70.8	80.3	91.2	102.8
Measurement in inches and quarters around largest part of the chest.....	22.4	23.1	23.7	24.8	25.5	27.5	27.9	29.2
Measurement in inches and quarters around chest after deep inspiration...	23.5	24.9	25.1	26.2	26.8	29	29.7	30.3
Measurement in inches and quarters around hips.....	23.9	24.4	25.8	26.6	28	30.5	31.1	32.7
Pulse, number of beats per minute.....	89.4	87.8	81.9	89.8	87.3	89.1	88.5	90.0
Respiration, number per minute.....	24.6	24.2	23.0	24.4	22.1	20.7	22.1	22.1

PREJUDICES AND SUPERSTITIONS MET WITH IN THE MEDICAL INSPECTION OF SCHOOL CHILDREN

BY

JACOB SOBEL

"Parents control the bodies and minds, the hearts and souls of their children not so much by what their ancestors were as by what they themselves do and think."—*Nathan Oppenheim.*

As every country has its language, its literature and its laws, so, too, it has its traditions, prejudices and superstitions; some racial, other religious, which often prove to be serious obstacles in the path of physicians and nurses engaged in municipal health work. In the cosmopolitan city of New York, with its 5,000,000 people, its 700 schools—public and others—its 825,000 school children, we have several lands in one, for with the swarthy Syrian, the flaxen haired Swede, the confiding loquacious German, the wary and reticent Greek, the suspicious Russian, the doubting Italian, and the Jewish, Irish, Bohemian, Hungarian, Polish, Slavish, Armenian, French, colored, Japanese, Chinese and Scandinavian elements, there arises a mass of doubt and hesitancy regarding the laws of health and proper living, which education alone can overcome. It may seem a far reaching statement to make, but the truth is, that in the prevention and treatment of disease among the tenement population in New York City, the physician or health officer must deal not only with the conditions at issue, but what at times is more difficult—he must meet and combat a fusillade of prejudice, tradition and superstition, ignorance, distrust, apprehension, indifference, irresponsibility, poverty and antagonism.

When the history of the twentieth century has been written, it is doubtful if any accomplishment along the lines of preventive medicine will stand out more prominently than the medical inspection and examination of school children; inspection whose preëminent consideration is prevention of disease; inspection which at school guards against contagion in every form and discovers the existence of physical defects that interfere with the child's development, school progress, educable capacity, equipment and future usefulness; inspection which by a thorough "follow up" process in the home unearths hidden and unsuspected contagion and stimulates in parents an endeavor to have physical defects remedied and thus prevent shattered and perverted lives and degenerate citizenship; inspection which is not only of and for to-day but which will make the future homes a more potent environ-

ment for the development of the physical, mental, moral and spiritual well being of their offspring; inspection which has for its ultimate goal the betterment of home conditions and the welfare of the child—"the nation's best asset" as he has been called.

The socioeconomical conditions of life in New York City are so complex, so different from those of almost any other city in the world, and so intimately interwoven with school life, that any attempt at accomplishing results from medical school inspection, however complete, will prove only partly successful, unless constant and repeated attention is given to the home. It is in the home that many conditions, which after persistent effort are eradicated or ameliorated by the nurse at school, are reborn as it were to renewed activity; it is in the home that hygienic, dietetic, and other errors must ultimately be corrected and it is in the home that the peculiar customs and mode of living which have been brought to us by the alien population and which are pronounced and firmly rooted, must be combated, ere we hope to see light in the solution of many school problems.

To appreciate the part which tradition, prejudice and superstition play, one has only to accompany an inspector and nurse of the Health Department to the various home quarters to which their daily work carries them. Here you will be brought face to face with a motley crowd which may not "fit the age in which we live" but which must be reckoned with and approached in every instance from a different standpoint.

Come with me then into the heart of the tenement district and listen to the answers which are given to the inspectors and nurses in response to their plea for early and proper treatment of the physical defects found in the school children and to their advice on prevention of contagion, on child diet, child care, hygiene and sanitation. It is needless to state that defective eyesight in its many phases—near-sightedness (myopia), far sightedness (hyperopia), astigmatism, etc.—is one of the most frequent cause of school retardation. Truly with many of the children, to see or not to see *is* the question. And yet the answers which some parents give and the arguments which they advance in response to the request for eyeglasses and other forms of treatment would seem laughable were the problem not so serious. They will tell you that eyeglasses are a luxury, that they are worn for style, that they make the child look old, that the child will get used to them, that he or she will be subjected to ridicule at the hands of the playmates, a frequent taunt being "Oh you four eyes!" They add that the wearing of eyeglasses will become a habit, that the child will never be able to get along without them and that the eyes will grow weaker. And after all this, the mother of the lower East Side—the Ghetto section—will

tell you that the presence of eyeglasses will interfere seriously with her daughter's matrimonial prospects, that she "won't marry well," or as one mother told me of her ten year old, "if she needs glasses let her husband buy them." It is in fact an open secret in this section of the city that the marriage marketable value of a daughter with eyeglasses is below par. Not infrequently when visiting the home of a child excluded from school for mucopurulent conjunctivitis you will find an infant or another child similarly affected and the mother attempting a cure by literally squirting breast milk into the eyes. What a woeful waste of nutriment! What an ideal culture medium for bacteria! And many mothers in order to prevent strabismus will continually keep passing their hands before the child's eyes, while the Bohemian element not infrequently treats ulcer of the eyeball by dusting sugar into the child's eyes.

How many children of to-day owe their deafness to the fact that their parents considered "running ears" beneficial and to the belief that like "running sores" they allowed the "poison" to escape readily and thus purify the blood? I have often called the attention of parents to the fact that a child experienced some difficulty in hearing which should be given *immediate* attention, only to be informed that "at home he hears too much."

With all that has been written, published and preached on the subject, it would seem as if parents should realize the necessity and importance of free and unobstructed nasal passages. Nothing is more vital for the growth and development of a child's body and mind than oxygen. And with oxygen we might group sunlight, the arch enemy of the tubercle bacillus, organic matter and humidity; for as the Italian proverb puts it: "Where the sun does not go the doctor does." The ill effects of enlarged tonsils and adenoids—the main cause of nasal obstruction in childhood—are constant, progressive and accumulative and are acting against the child all the time. These defects impair the proper ingress of air and therefore limit the process of healthful tissue changes; they disturb sleep, cause restlessness and night terrors, interfere with the hearing, tend toward deformities of the jaw, render speech and voice defective, stunt growth and development, predispose toward pulmonary involvement and chest deformities and interfere with what a school child requires most—his memory and retentive faculties. And yet when all this is explained what do we hear from some parents?

The negress, with full assurance of her position, informs you knowingly that her child's nasal twang is due to the fact that the "child's palate am down" and follows this enlightening statement with the

advice that by constant pulling of the hair on the top of the child's scalp the palate will become elevated and the condition relieved.

One of Ireland's buxom daughters, when told of the enlargement of her child's tonsils stated defiantly, "Is that so? Sure God put them there and there they'll stay." And in many cases they do—while you make a hasty exit.

The colored mother, when approached upon the question of operation for these conditions frankly tells you, "The Lord made my child as He made me and I aint going to have no one trying to improve on His work." An educated negro, when advised to have his adenoids removed, indignantly replied, "The negro is in a great measure characterized by his flat nose and yet you advocate the removal of my adenoids which would result in making my nose higher. I shall never do it. Always be what you are."

The mother of the Jewish ghetto offers as her excuse, "If the tonsils are taken out, the throat will be too wide and air will rush into the lungs too quickly and produce inflammation of the chest." While another will tell you that removal of the tonsils will interfere with the speech and indeed with the singing voice, and again you will be told that removal of the tonsils and adenoids "produces a loss of sexual instinct and creative power," or that the patient will "become hypochondriacal and have suicidal tendencies."

Voodooism or the superstition of the negro finds its victims in the Northern cities as well as in the Southern States. I have come in personal relation with cases where the use of different colored yarn was applied by the "doctor" for the cure of contagious and other diseases found in school children—red yarn for erysipelas; yellow for jaundice; pink for "pink eye" and white for anemia. One inspector, when working in a school district frequented by negroes, was much perplexed at the stubbornness of a large number of cases of ringworm only to learn that the best treatment was held to be the application of a round piece of cloth which the voodoo doctor carefully applied, mumbling diligently the while.

The Italian parent is firmly convinced that the unsightly crust of eczema so often seen on the scalp, is a protective covering placed there by an all wise Providence and that to remove it would cause the death of the child. Even a suggestion that olive oil be applied—and olive oil, according to the Italian mind, is surely good for what ails you—is not over enthusiastically received and the appearance of an otherwise attractive little Angelina or Raphaelo is marred.

Venture to tell the East Side mother to cut the child's hair, which is matted together by dirt, pediculosis capitis or scalp disease and note

her horror at the thought of his growth being prevented or of his strength going with it.

And who is so bold as to enter one of these homes and advise that the child's nails be cut short. Cut them, so that he "will become a thief" or "have his speech retarded" will be the retort. Bite them off—yes! Cut them—never!

Comment adversely upon the Italian school child dressed in an array of garments of many sizes, shapes and colors, which may be pulled off one after the other like the coats of an onion, and be told that if these precautions are taken in the Fall he will be protected from the rigor of Winter, the dangers of cold and the discomforts of low temperature. While in the home, argue with a mother of this nationality against the use of the swaddling clothes in which the infant is bound and which impede its freedom of motion and interfere with its breathing and circulation, only to be assured that this mummy-like garb will keep the legs straight and the feet small. Like the Chinese the Italians believe that small feet are a distinct advantage for girls.

Fancy entering a home on the lower East Side—the Jewish quarter—for the purpose of instructing a mother in the care of the mouth and teeth, to be shown her toothless jaw and then to be told in significant jargon, "I haven't any teeth either and I am alive."

Continue your rounds in this section, meet a well nourished and well developed youngster, admire it, say nice things about it, be friendly with it and then watch the mother hastily lick its eyes and face three times, expectorating as she does so. How else can she remove the "evil eye" which you have unknowingly cast upon it? And if she does not resort to this procedure, it is only because she has scared away this evil spirit by sewing some salt in the child's shirt or by tying red ribbon around its wrist or neck. The negress will tell you that pulling teeth gives the children sore eyes and that "it is bad luck for any poor child to have gold or silver in the mouth." One mammie said, "I pulls my own chiles teet and they is mighty lucky if they kin git the holes stopped up wid meat and bread."

Woe betide you, if you chance to step over the child as it plays on the floor in his home! Doesn't this retard its growth? Atone then for your mistake, retrace your steps and recross it.

Time and again you will be told that the child has ringworm because he played in the circles which children so frequently chalk for games on the sidewalk.

You may be discoursing upon the backwardness of the child in the school studies and its dependence upon some physical defect, only to be looked at by the mother in wonderment and told that "the child's memory is weak because he persists in eating the ends of the bread

loaves." Or you may be instructing the mother that the cause of her child's bed wetting is some nervous disturbance, some disease of the kidneys or bladder, or perhaps adenoids, only to see her shake her head significantly and in her compassion for your ignorance say, "The child always plays at the fire with matches before he goes to bed."

Primary or essential malnutrition claims about 3% of the school children of New York City—some twenty to twenty-five thousand—and calls for instruction to the parents on proper housing, sleep, play, ventilation, personal and home cleanliness and food of proper quality, quantity, selection, preparation and palatability. It also means that such children are referred by the inspector and nurse to open air classes or country homes, that suitable school lunches are provided and that the coöperation of the various social and relief agencies is obtained. But many mothers will tell you that their children are pale because they look into the looking glass late at night. Why does the nurse insist upon telling the mother that she must not give the child "a taste of everything"? "Doesn't this indiscriminate tasting harden the child? And doesn't deprivation at this time mean that in after years the child will suffer from want, hunger and unsatisfied desires." The Italian mother whose child is suffering from poor nutrition is with great difficulty persuaded to discontinue wine, beer and coffee as of no nutritive value. These are considered as tonics and are used to "strengthen" the children.

I remember having had occasion to advise one mother as to the existence of adenoid vegetations and pigeon breast in her child only to be told at the next visit of the following therapeutic measure for retarding the further development of the chest deformity. The child was taken to the coffin of a religious individual and the latter's hand was rubbed several times over the pigeon breast, when presto, the deformity was supposed to decrease.

And after advising proper measures for the removal of warts and moles, I have been told that a small piece of meat *stolen* from a butcher and buried in the earth would cause the growth to shrivel up and disappear simultaneously with the disintegration of the buried meat.

What would you say of the theory of predigested food stuffs if you saw a mother deliberately chewing bread, meat or vegetables and then placing it in a spoon and giving it to the child?

Often you will find that your visit to a sick child is accepted with great satisfaction because of the belief that "each friendly visitor takes away one sixtieth part of the disease."

Frequently enough you will observe that the mother calls her child to task for describing upon his body how a neighbor's child was operated

upon, fearing that because of this, a similar operation will be performed upon him.

I remember one little Italian youngster who was always shy when I approached him, afraid it seemed to me as if someone were about to do him bodily harm. Subsequently I learned that having red hair he was looked upon as a "bad character" and as such was beaten regularly—a therapeutic measure indicated according to the mother's interpretation.

Such are some of the difficulties with which the path of the inspectors and nurses of the Department of Health is strewn; such are the types which they meet, such the conditions which confront them daily and which call for tact and judgment, patience and perseverance, kindness, encouragement and enthusiasm. And thus you will see, as James Creelman puts it, that New York City is "a Niagara of conflicting bloods, tongues, religions and civilizations, flowing together from all parts of the earth, and carrying with it the social and political prejudices and discouragements of older nations. London is English, Paris is French, Berlin is German, St. Petersburg is Russian and Canton is Chinese, but who will say that New York, the largest municipal unit in the world, is American?"

To recognize a condition, to inform parents of its existence is one thing, but to have treatment instituted is another. So serious at one time did this question of parental coöperation become that it was suggested that legislation be enacted to compel parents to have these physical defects remedied.

It is questionable whether any such compulsory law will be enacted in our day, any that will stand the test of the courts, and I admire the courage of those who advocate the idea. With Kerley I prefer to say, "I do not believe in compulsion or in attempt at legislating righteousness into people. I do believe in education sufficient so that each individual may with reason and intelligence direct his life and habits." The easier way, that of education, I believe to be along the line of least resistance; "accomplishing mighty feats by gentle suasion" will prove in the long run not only more effectual but more lasting.

Dr. Abraham Jacobi, in an address, said: "I have come to believe that the social betterment and the equalizing humanitarianism required in our country is better than the social revolution which I hoped for fifty or sixty years ago. I believe that more can be accomplished by organization, coöperation, and evolution than by more violent means. The lesson taught by the great men of science is that we should leave some vestiges of our creation, large and small, to live after us."

I present for your consideration four charts which show in a numerical way how a persistent follow up campaign in New York City has

succeeded in routing the forces of prejudice, distrust and superstition and how as a result, increased physical efficiency of school children has been attained.

Chart No. 1 shows that of the children examined during 1909-1912 the percentage of those requiring treatment for all physical defects declined from 74.48 in 1909 to 71.6 in 1912.

CHART I.
NEW YORK CITY.

Year	No. of Pupils Examined Physically	No. of Pupils Found Needing Treatment	No. of Pupils Found with Defects of Teeth as Only Defect	No. of Pupils Found with Other Defects than of Teeth Only	Percentage of Children Examined Requiring Treatment
1909	231,081	172,112	69,962	102,150	74.48
1910	266,426	196,664	95,062	101,602	74.
1911	230,243	166,368	90,511	75,857	72.
1912	287,469	206,720	119,359	87,361	71.6

Chart No. 2 shows that of the children examined and requiring treatment for other defects than of teeth only the percentage has declined from 44.2 in 1909 to 30.1 in 1912 and that the percentage of children requiring treatment for teeth has declined from 57 in 1909 to 49.4 in 1912.

CHART II.
NEW YORK CITY.

Year	Percentage of Children Examined Requiring Treatment for Other Defects than of Teeth Only	Percentage of Those Examined Requiring Treatment for Defects of Teeth
1909	44.20	57.
1910	38.40	62.
1911	32.70	58.1
1912	30.1	49.4

Chart No. 3 shows the educational results of medical inspection and examination of school children, in that the percentage of children with defective vision, defective nasal breathing and hypertrophied tonsils has declined steadily from 1909-1912. This table also shows that all children considered, the percentage with defective teeth has

declined from 57 in 1909 to 49.4 in 1912. Essential malnutrition, that is, malnutrition without any contributing physical defect, has remained almost stationary—3.14 in 1909 to 2.8 in 1912. These figures, coupled with our experience that in children admitted to school for the first time the number of defects found is becoming smaller, proves to my mind that the public is beginning to learn the lesson that the best time to take care of the child's health is *before it enters school*. The examinations during these years were conducted in similar groups of children, new admissions being examined first in all cases and then examinations being made from grade to grade.

CHART III.

NEW YORK CITY.

Percentage of Defects Found Among Children Examined

Year	Defective Vision	Defective Nasal Breathing	Hypertrophied Tonsils	Defective Teeth	Essential Malnutrition
1909	13.4	18.7	22.	57.	3.14
1910	11.	15.	18.	62.	3.25
1911	10.6	11.8	15.	58.1	2.5
1912	7.3	7.6	10.4	49.4	2.8

Chart No. 4 shows how the public has been educated up to the necessity for the use of eyeglasses—27% in 1909 to 50.5 in 1912—and to the

CHART IV.

NEW YORK CITY.

Year	Eye Glasses Procured			Operations for Hypertrophied Tonsils and Defects of Nasal Breathing		
	Cases of Defective Vision Found	Number of Glasses Procured	Per Cent of Glasses Procured	Number of Cases of Hypertrophied Tonsils and Defective Nasal Breathing	Number of Operations	Per Cent of Operations
1909	30,408	8,218	27.	94,327	20,731	22.
1910	29,634	9,929	33.	90,958	18,989	21.
1911	24,514	11,304	26.46	61,955	21,092	33.3
1912	21,078	10,658	50.5	51,952	14,527	28.0

advisability and benefits of operations upon the nose and throat—from 22% in 1909 to 28% in 1912. The decrease from 33.3 in 1911 to 28% in 1912 was due to the inability of our nurses to take the children to hospitals and dispensaries as frequently as in former years, because of the institution of a system which placed the control of contagious diseases in their hands and which required the major part of their time at school.

New York City because of the constant influx of immigration has at all times a conglomerate army of alien population which must be taught. That this is feasible despite the aforementioned obstacles, that education does and has reached them is testified to by the fact that many parents have come to realize the importance of having the physical defects of their children treated or removed and *have done so in many instances before the child entered school life*.

And it is common experience these days to find that the word operation for school children does not carry with it the terror of years ago. Time there was when to mention this word was to incite a panic, not only at home but in the immediate school and neighborhood. To-day many parents have been educated up to the point where they realize that intervention of this nature is the only proper method of cure, and they signify their approval in many instances by permitting, yes requesting, the nurse to take the child to the clinic. To see one of these mothers, who a year ago shrunk from the idea of operation, reason with and urge her neighbor to have the child operated upon, can be appreciated only by those who have watched the development of this work. Nor does the idea of oral hygiene and the care of the teeth meet with that indifference which was formerly so pronounced. Now we see the tooth brush and powder in many homes, albeit that at times one brush is called upon to do service for the entire family.

The present generation of mothers, largely foreigners, can and are being educated, but this education must of necessity proceed slowly and with difficulty. They are so imbued with fear, indifference, suspicion, tradition, prejudice and superstition that knowledge up to a certain point only will be absorbed. The vast majority of mothers are willing and anxious to keep their children well and will try to do so if approached in the proper manner. They must be taught to recognize the solemn duty which rests upon them, they must lead the way that their children may follow; they must learn in order that they may direct. And what *they* do not learn the school boys and girls of to-day—the citizens and mothers of the morrow—will teach them. *They* will bring into the homes, by reason of superior advantages offered to them, that light, that knowledge which will cause fewer lives to be sacrificed upon the altar of doubt, ignorance and superstition. This

is exemplified during every summer vacation by our organization of Little Mothers' Leagues and by the school children voluntarily presenting themselves to many of the clinics for diagnosis, treatment or operation, so that they might obviate the possibility of treatment during the school term.

A kind word, an evident interest in the child, gentle suasion, explanation of the effects of the condition and the benefits of treatment, *with special emphasis upon the fact that removal of the defect will increase the child's future wage earning capacity, a plain heart to heart talk in their native tongue*—therein lies the hope of parental coöperation these days.

And this parental coöperation will come about in one way only. Just as a Prussian King once said, "Three things are necessary for war—money, money and more money," so in overcoming tradition, prejudice and superstition three things are necessary—"education, education and more education."

Concentration of our energies upon the home, upon the mother, must be our byword if we ever hope to help the child.

Train ye a mother in the way she should go and when her children grow up they will not depart from it.

TUBERCULOSIS IN SCHOOL CHILDREN

BY

J. HERBERT DONNELLY

Whether we believe, as Hamburger insists, that tuberculosis is an infectious process accompanying every civilized human being from childhood to the grave, or whether we believe the condition rare before puberty, recognizing a predisposition or physiological poverty, the fact still remains that proper consideration must be given the child if we are to control and eradicate tuberculosis.

Too often the child of to-day is the consumptive of to-morrow. Handicaps, such as heredity or exposure through family association, wear down that innate power of resistance. Predisposing factors, such as poverty, misery, overcrowding and underfeeding, vitiated air and crowded tenements, are the ploughshares that prepare for the seed to fall on fertile ground, and, alas, as Osler says, "The day is with the Invader."

Statistics on the subject of tuberculosis among children are so varied and so confusing that it is with apologies that I present a few garnered from the record of the first six months of the present year.

Six hundred and forty-three cases of tuberculosis, including all forms of the disease, were reported in Buffalo during that period, and of this number sixty-two were cases of children under the age of sixteen years. Of a total of 203 cases reported in the advanced stages, eight were under sixteen years. Out of 123 cases reported as second stage only six cases were under sixteen.

The figures for the year 1912 shows that six cases of pulmonary tuberculosis were reported in children between the ages of four and five years, twelve between the ages of five and ten, twenty-seven between ten and fifteen, ninety-seven between fifteen and twenty, and 301 between twenty and thirty years.

Are we to believe with Morris that pulmonary tuberculosis is rare before puberty, or are we to believe that latent lesions are often present and only await adolescence to be fired into activity?

The diagnosis of pulmonary tuberculosis in infancy and childhood is accomplished with extreme difficulty. Chronic sore throats, laryngitis, bronchitis, adenoids, etc., with frequent cough, occurring as it often does among poor children, distract attention from the true cause. Again, the non-appearance of sputum in the children of younger years is a serious handicap. Though the swab method is valuable in obtaining

specimen from the throat, it requires considerable technique on the part of the diagnostician.

In a certain city, where medical school inspection is of the highest character, 130 deaths from pulmonary tuberculosis were registered with the Bureau of Vital Statistics, although only eight were detected on medical school examination. These children were undoubtedly removed from school ere it was possible for the medical school examiner to detect their condition without the removal of clothing for a chest examination.

It is true that the reports of medical examiners may not show many pulmonary tuberculosis cases diagnosed, but when we consider that enlarged tonsils, adenoids, polypi, deviated septums are in themselves predisposing causes, and knowing that at least 10 or 12 per cent. of all adenoids and hypertrophied tonsils are tubercular, it must be admitted that tubercular medical inspection is accomplishing a great work.

Dr. Cronin says that obstruction of the head cavities prevent nutritional and developmental growth, and that they offer a favorable lodgment for tubercle bacilli and may furnish a primary focus of the disease. The growth, development and vital resistance of the child are strengthened by their removal.

At one time children walking with the aid of crutches were permitted to attend school, while afflicted with open running tubercular sores from bone, glands or joints; their clothing often saturated with foul-smelling pus. Through medical inspection of schools all such children are eliminated. Remember, I do not say that all children with bone or joint tuberculosis are in danger of communicating the disease to others, but those with open sores and sinuses, where there are pus micro-organisms, should be and are excluded.

Dr. Arthur Gillette says that it is very rare for a child to be born a cripple, and when it does occur they are, with few exceptions, easily cured. Most deformities are the result of disease, and he says that tuberculosis, directly or indirectly, causes more than 50 per cent. Tubercular adenitis, or scrofula, meaning tubercular disease of the lymph glands, more especially of the neck, may be found among all classes of children, but generally in the poorer classes.

Conditions favoring such infection are chronic sore throat, enlarged tonsils, decayed teeth, middle ear diseases, etc. One favorable comment may be made that though the course may be protected, recovery very often ensues and sometimes the general health of the child may be little affected, though there be active pus formation and discharges. Do not think that all cases of swollen glands are tubercular, because even in robust children infectious processes and nose, throat, teeth, etc., may cause large enlargement where no tubercles are present.

Tuberculosis of the intestines and mesenteric lymph glands: Tuberculosis of the intestines is not one of the most frequent forms in children, and is most common between the ages of three and eight years. It is possible, but exceptional, for infection to occur through the general circulation. Holt says the infection is from the alimentary canal. In nearly every case the disease is secondary, and when primary the bacillus is undoubtedly of the bovine type. As one would naturally infer the source is tuberculous milk. The usual seat is the small intestine in which tubercular ulcers may be found.

Tubercular meningitis, as you know, is a tubercular inflammation of the covering of the brain and cord. Seventy per cent. of acute meningitis is probably tubercular and is more uniformly fatal than any other disease of early life. The tubercle bacilli find their way to the meninges through the blood stream or through the lymphatics, the most plausible theory is that these patients infected sometime previously carry a latent focus, possibly the bronchial glands, and under the influence of acute and respiratory infection an active lesion produces the disease.

Just a word about the relation of infectious diseases to tuberculosis and childhood. Measles and whooping cough especially are now characterized as the most important factors in the mortality of early life. Tuberculosis is observed to follow as a complication, or sequel, in from 5 to 16%. It may be that a pre-existing focus is present, yet the catarrhal affections of the respiratory mucous membranes certainly heighten tubercular invasion, even primarily. Therefore, all precautions observed for weak and strong alike, that tend to eliminate as far as possible these diseases must be factors in the good work of keeping the school child free from tuberculosis.

Two striking points on the eradication of tuberculosis are the home and the school. Concerning the former, certain essentials are necessary in our dealings with tubercular patients, and segregation is of prime importance. True it is that home ties are often broken and where the cup of sorrow is filled nearly to the brim it seems a shame to have the sufferer think we are trying to add more, and it often rankles in the breasts of certain tubercular families that an injustice has been done and that they are the subjects of persecution.

In every community tubercular adults may be classed in four groups:

First: Those willing and able to carry out all essentials for their betterment and that of their family and of the community. This is the ideal class.

Second: Those willing but unable to carry into effect these requirements. These are the poor victims, who, tired and weary of their burden, anxiously strive by every means to learn the exact state of their

condition; anxious to become well, anxious to protect their families, but compelled by necessity, they must work to live among the overcrowded and to eat with the underfed.

Here the "Big Four" factors, I call them, play their important parts and often aid the sufferer in stemming the tide of adversity into which he is plunged. These are the tuberculosis nurse, the family physician, the various philanthropic societies, and good hospital and sanatoria accommodations.

These factors, working harmoniously, find the sick toiler much more amenable to persuasion, when he or she is assured that those depending upon them will be well cared for.

Class Number Three: Those unwilling but able to carry out these essentials for their own betterment, etc.

This class is certainly a great source of worry to any Department of Health, to say nothing of the various interested organizations and of the community. Reported by physician after physician they are not satisfied to follow medical advice, but consult mental healers, clairvoyants and others of the class and ruin their chances for recovery by using fake nostrums.

Precautionary advice from department nurses and inspectors is met with indifference and arrogance. Patients insist on sleeping with other members of the family, though they may absolutely deny this on the occasion of the nurse's visit. Though supplies are furnished they use them only on compulsion. Their finances may be sufficient to keep the family, or perhaps the patient works among his fellow employees until weakness compels him to take to his bed.

Class Four: Those tubercular cases unwilling and unable to carry out essential precautions. Many of these are wanderers and alcoholics, some with criminal records, and others designated as the so-called failures in life. They move from one rooming house to another, or sleep in cheap lodging houses, with an occasional short visit to friends or relatives. These two latter classes require supervision by nurses and inspectors; they are the bane of the tuberculosis division; they seldom visit a physician and absolutely refuse to visit the dispensary or go to a hospital.

Recently an act has been passed, or rather an amendment has been made to the law, which permits of compulsory removal, where a tubercular man or woman, through carelessness or bad habits, endangers his family or the community. If these facts are substantiated they may be placed in a hospital for not less than sixty days.

You may wonder what significance this classification of tubercular adults has in the treatment of tubercular children. My contention is

that 40 or 50 per cent. of all children found actually associated with pulmonary tuberculosis are, themselves, tubercular.

The school examination of children involves such vast numbers for each physician that he must receive coöperation from principals and teachers to make his work successful. Certain points are essential not only to prevention, but sometimes actual diagnosis that can be made by the teacher. Malnutrition with anemia and listlessness coupled with loss of weight are not extremely difficult to detect, and among other things Dr. Shoemaker says to weigh the children monthly, and at the end of the second month those losing the most should be sent to the inspector.

Second: Cough, especially of long duration after measles, or the cough of an anemic boy or girl, should be referred to the medical inspector.

Third: Most teachers, especially here in Buffalo, are experts in the selection of mouth-breathers, and by so doing they are aiding in the tuberculosis work. How any one would expect a school physician to diagnose an incipient case of tuberculosis through a layer of clothing when an adult stripped to the waist requires two to three examinations by an expert is beyond me.

Enlarged lymph glands, enlarged tonsils and adenoids may create a suspicion. Sputum examination should be made in the older cases. Good history cards would be very valuable, but histories are often faulty, as in cases of death from tuberculosis, the real cause is often denied even though the death certificate shows the person to have died from tuberculosis.

The various cutaneous tests, Von Pirquet, Moro, etc., are valuable, but not for our uses at the present day, though they patiently wait the school dispensary and school clinic. At the present time the Buffalo Tuberculosis Division requests the examination of every member of a family. In private cases the supervising nurse telephones the physician and asks permission to send a nurse to visit the case. Over 700 such visits were made last year. On the occasion of visits by the nurse the family is tactfully advised to visit their physician for examination, and where the expense is a serious consideration we have found very few physicians whose services were not gratis. The Tuberculosis Dispensary examined 1,594 exposed cases referred mostly by our Health Department nurses.

Saturday morning is children's day at the dispensary, but on any day the percentage of children examined amounts to thirty-three.

Certain families refuse to go to the dispensary, but will permit the Tuberculosis Inspector to visit them for the purpose of examining other

members of the family. On the first visit made by the nurse she obtains the names of all the members of the household. This information is filed on a card index. This system tells at a glance whether or not other members of the household have been examined. Their diagnosis, number and dates of visits, hygienic conditions, house precautions taken, and other valuable information is also shown.

Under the head of helpful preventions let me mention, first, fumigation and renovation after death or removal; the destruction of all clothing, mattresses, pillows, etc., by burning.

Second: Reinspection of these houses to see that all orders have been carried out, that the renovation of the house is complete, and that the house has been cleaned with soap and water and properly aired.

Third: Preventoria for weak, anemic and children with rickets. Homes where these children may be sent with their mothers if necessary to recuperate in the fresh air or sunshine.

Fourth: Open air schools require no mention; they have been mentioned in this Congress so frequently that all are familiar with their excellent advantages.

Fifth: Playgrounds and the swimming tanks are the means of developing the narrow shoulders and chests. Compare Dr. Knopp's exercises for deep breathing and see the similarity of the breast stroke of the swimmer.

As long as medical science will not enlighten the masses with the fundamental principles, it has failed in its most vital vocation. This is an opinion of Dr. Jacobi. He claims the simple facts of medicine should be taught in intelligible language, in schools, from platforms and in the press.

Teach the cause of tuberculosis; surely a foe of mankind, that kills 150,000 annually is worthy of our attention. The tubercle bacillus can be illustrated by drawings, by lantern slides or by microscope. Show the chief sources of danger. The sputum from tuberculous lungs and tuberculous milk show how the germs are scattered by the indiscriminate spitting of consumptives and carried by the shoes and skirts of the careless, sweeping, the soiled handkerchief, and the public drinking cup. The deposit of the tubercular germ in the milk or on other food by the fly should also be illustrated.

Then they will understand the necessity for sputum cups and paper napkins for tubercular patients, of their sleeping alone, the necessity for individual drinking cups, of cleanliness, of sunlight, of fresh air, and of good health with which to combat the disease.

Phthisisphobia is the dangerous extreme and though the careless consumptive may cause endless mischief the careful one is not dangerous

to those with whom he associates. Any citizen has the right to complain when they find a tuberculous person to be a menace to the family, or to the community. It is not only their right but their duty. Moreover it is the duty of the teacher, principal, and all other educated men and women to call the attention of the department to any suspected tubercular case that by injurious habits becomes dangerous. The State law prevents disclosing the information on records of tuberculosis persons to any outside individual. It is as it should be, but the Health Department's willingness to receive complaints is known and any complaint is always acted upon, and is thoroughly investigated.

Dr. Knopf, in one of his papers, calls the attention of his readers to the fact that from the 150,000 annually registered as being caused by tuberculosis, 50,000 have died without having been able to give their relatives or the community any return. Making the average duration of the young life as 7.5 years, and estimating the cost to parents and community as only \$200 per year, the annual loss to the United States would be \$75,000,000, because it had not prevented a preventable and curable disease in childhood.

Dollars and cents cannot calculate the suffering, the disappointment, the grief experienced by fond mothers and fathers, but they serve to measure a startling fact. It is such figures that call to our minds the value of hygiene. It is not a cure, but it means prevention, not only to the life of the individual, but to the community, to the State and nation. Coöperation of school and home and family physician and social worker, of medical school examiners and school nurses with the local and State authorities may not produce the realization of the ideal conditions worked for, but they will, at least, reduce by many steps indeed, the distance between the shadow and the substance.

UNWHOLESOME DIET A PRIME CAUSE OF INEFFICIENCY IN SCHOOL CHILDREN

BY

J. H. KELLOGG

The greatest need of the world at the present time is an improved race of men. Every beast which man has reclaimed from the forest and the prairie he has improved with the exception of himself.

The fact that 75% of the school children in the United States and an even larger percentage of the school children of most other civilized countries are defective presents one of the most serious of the numerous grave problems of our modern life. This enormous preponderance of unfit individuals—human lives blighted in the bud—is one of the most certain indications of the race decadence which with every passing decade is becoming more apparent and advancing with ever increasing velocity.

This great Congress is itself an evidence of the recognition of the importance of finding remedies for fundamental evils in the conditions of modern civilized life. Not the least of these evils is the ever increasing artificiality of our environment. Man's success in harnessing the forces of the universe to work his will and in molding animal and vegetable forms to suit his convenience have led him to assert an attitude of superiority in relation to the natural forces and instincts which govern his own body, and to assume the possibility of ignoring the conditions which controlled his primeval life and through which were evolved his marvelous organism and his matchless faculties. We are gradually coming to recognize the controlling influence of environment and the immutability of the laws of adaptation which have been wrought out through ages of experience.

The marvelous success of the treatment of tuberculosis by the outdoor life has led us to see the necessity for teaching tuberculous children out-of-doors and is gradually enabling us to see that out-of-doors is the proper place for children to study and to live every possible moment of their lives. Man is by nature an out-of-door animal. Experience has shown that children taught out-of-doors not only improve physically, but as a natural consequence, are keener intellectually. If the outdoor school is so beneficial to the pathological child, crippled and handicapped by disease, of how much greater service ought it to be to the normal child? The time will come when the old-fashioned indoor

school will be looked upon with as much abhorrence as we now regard the miserable habitations of the ancient cave dwellers.

Rousseau, Jean Paul, Froebel, Margaret Fuller and a host of other pioneers in educational reform have taught us the importance of recognizing and following natural methods in education. We are coming more and more to be willing to sit at the feet of Nature as the greatest of all teachers. Civilization has led us too far away from Nature. We have neglected to supply compensation for the disadvantages imposed by our artificial life. As a result, the human constitution is being crushed under such a load of abnormal conditions that the very existence of the race is threatened.

The school is the proper place for reform to begin. The good results which have been attained in the efforts which have already been made emphasize the importance of still more thorough-going efforts.

The whole life of the child must be protected against threatening evils. Since it is chiefly through their influence upon nutrition that unwholesome conditions influence a child's physical development, it is evident that those factors are most important which exercise the most direct influence upon nutrition—the most fundamental thing in human experience. Control of nutrition means the control of all vital processes, the molding of mind as well as body.

Life is metabolism. The individual life is simply the aggregate life of the body cells. If the number of body cells is reduced by an impoverished diet, the result must be a reduced and enfeebled life. Crippled body cells, the result of an unwholesome or insufficient diet, mean a crippled and perverted life. Senile cells, the result of a chronic preponderance of waste matter, means old age, no matter what the number of years an individual has lived. Food is the most powerful factor in influencing metabolism. First, because food furnishes the material out of which cells are built and repaired. Second, because it supplies to the cell the raw material for the support of its activity, the energy stuff out of which thought and action are produced; and third, because normal food supplies to the cell a natural and needed stimulus to activity. Hence, the question of food is one of primary importance in relation to the life of the child.

The under-fed child is weazened, stunted, dulled and blighted. The over-fed child is food-poisoned, stupefied, dazed and restless, handicapped by headaches, mental confusion and drowsiness. A badly fed child, supplied with sufficient but ill assorted food, may suffer from an excess or deficiency of protein, carbohydrates or fats or lack of salts or some essential element.

In the writer's opinion, ignorance in relation to proper feeding and the consequent injury to nutrition which results, is more responsible

than any other single cause for the race degeneracy which is staring us in the face and for the increasing number of defects among school children. Sir George Newman, in a report to the British Board of Education, found poor nutrition due to the lack of knowledge relative to the value of foods and their uses present in by far the great majority of children living in 13 counties and 16 urban areas. More than half the children were found to be suffering from poor nutrition in every urban area and in some the percentage of well-fed children fell below 4%.

That a similar condition prevails among the children of our large cities, and to a very considerable extent in smaller cities and in country districts, can not be doubted. This question is one of overwhelming importance and must receive first consideration in every well directed effort in the direction of race betterment.

Within recent times great progress has been made in lessening the mortality of infants by a scientific study of infant feeding in which able physiologists and clinicians have coöperated. In this study as well as in other recent researches in nutrition, new and highly important facts have been developed which will prove of inestimable advantage when brought into practical use. Unfortunately, however, the same degree of attention which has been devoted to the feeding of infants has not as yet been given to the feeding of older children, and the consequence is that a large proportion of those who escape the perils of the cradle are exposed to equally great or even greater dangers through the ignorance of mothers respecting the proper feeding during second infancy and early childhood. The narrow limits of this paper will not permit us to attempt anything like a systematic or exhaustive treatment of the subject, but only to call attention to a few of the more important points.

The question of under feeding has been in a general way well discussed and practical measures have been suggested for remedying this difficulty through the school luncheon. But a more insidious form of under feeding has as yet received little attention, viz, the lack of attention to proper balance in the child's dietary. In most discussions of this phase of the question of diet for children, very great stress has been laid upon the evils resulting from a deficiency of protein in the dietary. This is a possible danger, although the danger in the writer's opinion is by no means so great in this country as is generally supposed. Certainly too much stress has been laid upon the idea that a considerable amount of meat is necessary or desirable in a child's dietary. It is well known to physiologists that the casein of milk supplies a protein in every way capable of replacing the protein of meat and even more easily digestible and assimilable.

More than a century ago Count Rumford urged upon the people of

Bavaria the importance of avoiding the error of the English people in laying too great stress upon flesh foods as especially strengthening and nourishing. Certain vegetables, particularly rice and potatoes, contain a protein which is well adapted to the needs of the body. According to Rubner 100 parts of rice protein are capable of replacing seventy-six parts of animal protein, while 100 parts of potato protein are equivalent to seventy parts of animal protein. It is true that the protein of corn is defective as a human aliment, an equal weight having only about one-third the nutritive value of rice protein. But the protein of legumes is highly valuable, 100 parts of the protein of peas, beans or lentils equalling sixty parts of animal protein.

The cost of the better forms of vegetable protein is so small in comparison with the cost of animal protein that the poorest child may be amply supplied with protein provided its mother is only possessed of the necessary knowledge. A diet consisting largely of potatoes or rice with thick purées of peas or beans and a moderate allowance of milk can easily furnish an abundance of protein in the most assimilable form. Vegetable protein in general costs from five to ten as much as animal protein in the form of meat.

It is probable that children suffer more often from an excess of protein than from a deficiency. This is certainly true of children belonging to well-to-do families. The ancient error that flesh is a nerve and muscle supporting food still survives in the minds of the common people, although long ago exploded by the physiologists.

The experiments of Chittenden and others have shown that the sole function of protein in the adult is to make good the wear and tear of the tissues. The amount required for this purpose is very small, not more than thirty-five or forty grams a day. The amount of protein required for the growing child is greater in proportion than that needed by an adult, because of the need of protein for tissue building as well as repair, but the actual amount needed certainly can not be greater than that required as a maintenance ration for an adult.

Any excess of protein beyond the actual body requirements must be at once metabolized and excreted along with other wastes, thus imposing an extra burden upon the liver, kidneys and other organs involved in the oxidation of protein. The worst mischief arising from an excess of protein, however, results from the formation of toxins in the intestines by the putrefaction of undigested or unabsorbed portions of the food protein. The highly injurious character of these toxins, indol, skatol, phenol, and other putrefaction products, has been clearly shown by Metchnikoff and his associates in the Pasteur Institute, as well as by Distaso, Lane of London, Herter of New York, and other investigators.

Anemia, chronic headache, dullness, stunted growth, and various

skin diseases to which children are much subject, may result from an excess of protein. The teaching of certain writers that children should be fed meat in liberal quantities is a grievous error which should be combated.

Dr. L. F. Meyer, in a recent issue of the *Naturwissenschaften*, calls attention to the importance of a liberal supply of carbohydrates especially to the growing child. According to this able writer, carbohydrates and fats act as water storers, while albumin has little affinity for water. By aiding in the storage of water in the body, carbohydrates promote the development of the muscles. These structures are more than three-fourths water. A flabby state of the muscles indicates a deficiency of water. A liberal supply of carbohydrates, especially of carbohydrate foods which are rich in salts, promotes the growth of muscles and greatly encourages bodily development. An excess of carbohydrates, however, especially in certain forms, is highly detrimental. Special attention in recent years has been called to the great injury which frequently results from the use of large quantities of cane sugar in the form of candy and other sweets. Cane sugar in liberal quantity, according to Laborde, hinders the action of the digestive ferments of the gastric juice.

Brandl, in experiments upon a dog, showed that a solution of cane sugar of a strength less than six per cent. caused much irritation and reddening of the gastric mucous membrane, while a ten per cent. solution produced a dark red color, giving rise to congestion and irritation, and a twenty per cent solution produced an intense degree of irritation and great distress.

Mosso, the eminent Italian investigator, showed that cane sugar, when taken in considerable quantities, lessened the capacity for work in men and animals.

Prof. Fere, of Paris, insists that cane sugar should be regarded as a condiment rather than a food.

Ogata, in experiments upon dogs, showed that the addition of one third ounce of sugar to three and one-third ounces of meat fibrin undergoing digestion checked the digestive process to such a degree that the amount of digestive work done in a given time was only three-fourths that of the normal amount.

Dr. Hartley, of Brooklyn, in a paper read before the Medical Society of the State of New York, April 30, 1913, mentioned six ways in which cane sugar, used to the extent which is very common with children, is capable of doing harm: (1) By irritation of the gastric mucous membrane, causing catarrh; (2) By producing an excess of acids; (3) By interfering with the digestion and absorption of fats, so causing anemia and malnutrition; (4) By disturbing the digestion of starch; (5) By

producing acidosis, a form of acid intoxication; (6) By a variety of ill effects upon the nervous system and the mucous membrane.

Dr. Hartley urged that the attention of the public should be called to these harmful effects of cane sugar upon children and in the interesting discussion which followed the reading of his paper, Dr. Herman, of New York City, Dr. Potter, of Syracuse, and others, supported the views which he presented and cited cases in which serious injury had been produced by the free use of candy such as bilious attacks, headaches, listlessness, loss of appetite, suspended growth, catarrhal attacks, and a variety of symptoms resembling pulmonary tuberculosis.

Bunge, the world's leading authority on physiologic chemistry, some years ago called attention to the increasing consumption of cane sugar and its danger. To this cause he attributes the increasing proportion of pale faces, bad teeth and general malnutrition seen in so large a proportion of school children at the present time. Prof. Bunge insists that the use of sugar "should not be recommended," and advocates, as a means of curtailing its use, "an increase of the sugar tax." The reason given by Dr. von Bunge for the injurious effects of sugar is that this substance is not a complete food, but is deficient in the mineral elements necessary for the building up of the nerves and bones.

Deficiency of fats is injurious, but an excess is also injurious. It is probable that injury arising from this cause is much less common than lack of balance of the diet in relation to protein and carbohydrates.

A danger to which attention was first called by Prof. Bunge, and more recently by Prof. Sherman, of Columbia University, is the lack of lime in the ordinary food of both adults and children. Prof. Sherman estimates that half the population of the United States are suffering more or less from lime starvation. The body loses lime daily in definite amount. This loss must be replaced by food. If it is not replaced the teeth and bones will be drawn upon as a source of supply. When meat and sugar enter largely into dietary, the daily supply may not be more than one-half the amount required; the result will be a steady withdrawal of lime from the bony structures to make up the deficiency.

Children require a much larger proportion of lime than do adults. A German investigator, H. Aren, has shown the amount of lime required by young growing animals to be about 1.2 per cent. of the gain in body weight. For every pound of increase in body weight the animal requires 84 grains of lime.

In natural foodstuffs lime is found associated with starch and other nutritive elements. The average American eats one-fifth pound of cane sugar daily a considerable part of which is in the form of candy. This is sufficient to deprive him of at least one-seventh the amount of lime he requires. The candy habit is an insidious and pernicious evil.

The appetite for sweets is natural and should be gratified. The best of all forms of sweets are sweet fruits such as raisins and figs, and the juices of oranges, prunes, melons, etc. These, with the sugar, furnish the natural blending of lime salts the body needs.

Prof. Sherman has shown that the same sort of starvation takes place through the use of meat as a source of protein. In corn and wheat the protein is associated with lime, whereas in the flesh of animals the lime is lacking having been concentrated in the bones. The half pound of meat which the average American consumes daily deprives him of another seventh of the lime which his body requires. The combination of candy and meat thus doubles the mischief, reducing the amount of lime to less than three-fourths of the body's requirements.

A common and serious error in the diet of school children is the too exclusive use of cooked foods. Some uncooked foods should be eaten with every meal.

Fresh vegetables, salad greens and fresh fruits of all sorts are of special value. There need be no fear of indigestion resulting, provided care be taken to secure thorough mastication. This is, of course, most important. These uncooked substances contain diastases and enzymes which aid various bodily functions, especially by rendering active the digestive juices. Cooking destroys many of these subtle and useful foodstuffs, which can be easily digested without cooking. Cookery is best confined to such foodstuffs as cannot be well digested and assimilated without the aid of the physical and chemical changes produced by heat.

The chief value of fresh vegetables, however, consists in the large amount of alkaline salts which they contain and by means of which they are able to make an important contribution to the dietary. The investigations of Bunge show that the cereals, especially the whole grain cereals, the whole wheat flour, oatmeal, cracked wheat, etc., contains an excess of acid substances and when used too exclusively give rise to a state of the blood which is incapable of high resistance. Vegetables and fruits of all sorts contain an excess of the alkaline salts and hence are valuable for supplementing the cereals. These salts are useful also in neutralizing the acid wastes of the body. All kinds of bodily activities result in the production of acid. All fruits and vegetables contain considerable quantities of potash and soda in combination with organic acids—citric and malic acids. These acids are burned in the body, being utilized the same way as starch and carbohydrates in producing heat and other forms of energy. This leaves the soda and potash free to combine with the excrementitious acids of the body, thereby to a large degree destroying their noxious properties and facilitating their removal through the kidneys.

Another service of great value which is rendered by fruits and vegetables because of their richness in alkaline substances is the increasing of vital resistance. The blood is naturally alkaline. The more active the white blood cells or body defenders, the higher the bodily resistance; when the alkalinity of the blood is reduced by an excess of acids produced in the tissues by work or derived from the flesh of other animals through meat eating, the resistance of the body to disease is greatly diminished.

These simple facts should be taught to every child old enough to understand them. Another point of great importance in relation to the feeding of children, is the necessity for sufficient bulk. A diet consisting of fine flour bread, sweets and meats is not only deficient in lime and other elements necessary for the sustenance of a growing child, but is of such concentrated and digestible character that it does not furnish the bulk necessary for stimulating peristalsis. The human intestine is adapted to a moderately bulky dietary, and in this respect is intermediate between the intestine of carnivorous animals, which is two or three times the body length, and that of herbivorous animals, which is twenty to thirty times the body length, having a length about ten times that of the body.

Cellulose is practically the only indigestible element of human food.

This is found only in vegetable foods. The bran of wheat and the abundant cellulose found in most fruits and fresh vegetables serves a highly useful purpose in stimulating intestinal peristalsis.

The bowels move normally after each meal. Food is the normal stimulus of bowel action. Every child should be instructed that the bowels should be moved three times a day, and teachers as well as parents should consider it part of their duty to know that this normal intestinal rhythm is maintained. Facts gathered by the writer from hundreds of medical missionaries practicing among primitive tribes show that two or three bowel movements a day is normal among people who live under natural conditions. The keeper of the big monkeys in the London Zoo informed the writer that these animals move their bowels regularly four times a day.

Insufficient and infrequent bowel activity is almost universal among school children as well as sedentary people, and the chronic toxemia resulting is unquestionably in large measure responsible for the inefficiency of school children as well as brain workers of all classes. The constipated child is constantly handicapped by toxins absorbed from the colon. This is the most common cause of headache, dullness and functional inefficiency. Neglect to furnish a sufficient amount of indigestible material in the dietary is perhaps equally as grave a fault as any of the other errors to which attention has been called.

The importance of teaching children the necessity for thorough mastication of food should be constantly emphasized. Thorough chewing of food is absolutely essential for proper digestion and assimilation, and neglect of this function necessarily leads to decay of the teeth through depriving them of the blood supply which is essential to their development.

The need of supplying the growing child with an abundance of water is universally recognized by physiologists, and great attention is now given to this point in the feeding of infants, but certainly too little attention is given to this matter in the care of school children. It is generally regarded as quite sufficient if the child drinks when it is thirsty, but not infrequently there is a lack of desire for water just as there may be a lack of appetite for food, even when the body is in great need of water. The needs of the child in this particular are fully double that of the adult, not only because of the higher rate of metabolism in the growing child, but because of the greater skin surface in proportion to height and weight; hence the greater loss of water.

Children should be encouraged to drink even though not thirsty, just as they are encouraged to wash the face and hands, and for essentially the same reason. Water is a detergent, and its abundant supply is as necessary for cleansing the interior of the body as for keeping clean the exterior. School children should not only be supplied with every facility for drinking, but should be encouraged to drink by being given special opportunity for drinking at frequent intervals.

The evils resulting from the use of tea and coffee by children, also the use of Coca-Cola and similar drug beverages should be impressed upon both parents and children.

In order to remedy the errors to which attention has been called, active measures should be set in operation in connection with public school systems, universities, colleges, academies, private schools and educational institutions of every description. A trained nurse and dietitian should be connected with every school, whose duty it should be to obtain definite knowledge respecting the dietary of each child, and to exercise supervision over the same so far as necessary to insure good nutrition. The dietitian connected with public schools should visit every family and become acquainted with the family bill of fare. Mothers should be instructed not only in their homes, but by means of parents' classes held in connection with every public school. Municipal markets should provide the poor with foodstuffs at cost. The children themselves should be instructed in the fundamental principles of rational feeding, and this matter should be kept as constantly and forcibly before them as questions of conduct and discipline to which so much attention is always given.

Teachers should not be considered qualified for their duties unless able to properly instruct the students under their care in the principles of sound nutrition.

The great attention which has been given to the proper feeding of animals has improved the quality of our live stock, and by giving equal attention to the proper feeding of our school children, an equally great improvement may be secured for the next generation of men and women.

The school room which is now the nursery of disease and race deterioration, should become the nursery of a new race, an aristocracy of health, the attainment of which is the most important problem of our day and generation.

THE CO-EFFICIENT OF NUTRITION IN ANTWERP SCHOOL CHILDREN

BY

M. C. SCHUYTEN

It has been always the purpose of scientific men, in order to obtain good results for estimation or determination of the general physiological state of individuals, to find methods of external measurements giving surely the wanted data.

In that way anthropometric formula or indexes are used. Unfortunately they are all applicable on adults only, children do not come in question. Now in the last time Oppenheimer of Munich has proposed a new Index (Circumference upperarm $\times 100$, divided by circumference of breast in expiration), he applied on individuals of all ages, the method being found independent of these ages.

After examination of the scientific value of the method I applied it on 600 Antwerp schoolgirls between 3 and 6; 2,200 schoolboys between 3 and 14 years, in order to follow the eventual fluctuations during school grades. I formed social homogen groups of 100 children for each half year of age. According to Oppenheimer's formula, an excellent state of nutrition is marked by indices 29 and above; a good by 26-28, an insufficient or bad by less as 26.

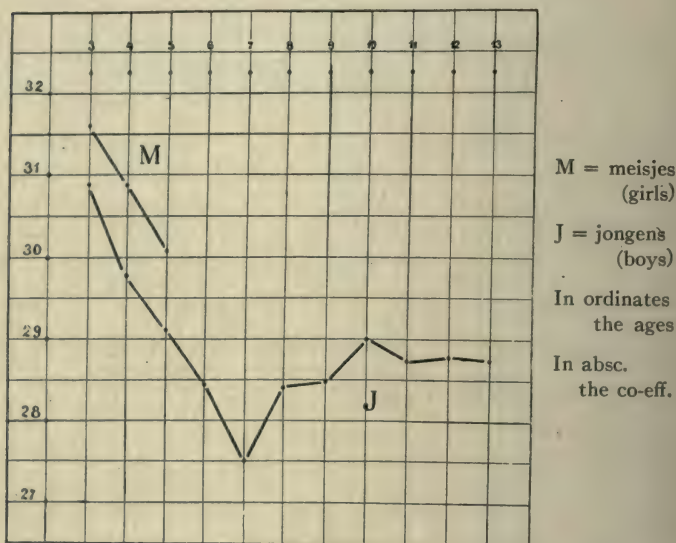
The results are condensed in the following mean table. It shows:

1°. For boys and girls the curve of nutrition state is regularly decreasing from 3-7, than increasing some 10ths of degrees in irregular manner.

2°. The first part of the Curve (see this) obeys to the logarithmic law of biological phenomena, pointed out by Ameline:

	3	4	5	6	7
Found.....	30,9	29,8	29,1	28,4	27,5
Calculated....	30,9	30,0	29,1	28,3	27,5 (Reason = 1,03)

This proves that the measurements are exactly made (1). As conclusion may be tabulated that children who go to schools lose gradually from year to year their original excellent state of nutrition. The decrease is "regular" to the age of 7; then begin through the following ages irregularities, which seem to indicate absence of normal physiological equilibrium (pathological state).



(1) Logarithmic Law of many biological phenomena: If a biological phenomenon is measured in equal time-distances, in arithmetical series (3, 4, 5, 6, 7 ...), the obtained so-called normal results are in geometrical series (3, 6, 12, 24 ...).

SOME VITAL STATISTICS OF CHILDREN OF SCHOOL AGE

BY

FREDERICK L. HOFFMAN

The present discussion is practically limited to observations on the mortality statistics of children of school age as returned by the Division of Vital Statistics of the Bureau of the Census for the calendar year 1911. The term "children of school age" is, of necessity, limited to ages 5-19 inclusive, since the census returns do not give the data by causes and single years of life, but only by the two divisional periods 5-9 and 10-19 years. The mortality returns can also not at the present time be scientifically correlated to the population of corresponding ages, since the required information for the registration area has not as yet been made public by the Census Office. For the present, purpose, however, this limitation is not of material importance. The following table will emphasize the practical importance of the present discussion, which affects the health and longevity of nearly 30,000,000 children and young persons of school age.

POPULATION OF THE UNITED STATES, AGES 5-19 YEARS, CENSUS OF 1910.

Ages	Males	Females	Total
5- 9	4,924,123	4,836,509	9,760,632
10-14	4,601,753	4,505,387	9,107,140
15-19	4,527,282	4,536,321	9,063,603
5-19	14,053,158	13,878,217	27,931,375

According to this table the population of the United States, ages 5-19 in the year 1910 was 27,931,375. Making allowance for the increase in population during the intervening period, the number of children and young persons of school age within the previous definition of the term may be conservatively estimated at 30,000,000 for the middle of the year 1913.

Of the population of school age a considerable proportion of both children and young persons are not at school, and a fair proportion are still within the illiterate class, which, however, is gradually diminishing throughout the United States. The proportion of children not at school of the age period 5-6 is quite large, and an equally large proportion of young persons ages 15-19 are not at school for economic, physical or other reasons. The census of 1910 fortunately gives the returns of the persons actually enrolled in the schools of the United States during

the year 1909-10, being apparently an adaptation of the statistics annually collected by the Bureau of Education. According to these returns the number of children and young persons at school during the year 1909-10 was 18,009,891. Making allowance for the increase in the population of school age during the intervening period, it is safe to assume that for the year 1913 the school enrollment was about 20,000,000. The explanatory note in the census report with reference to the foregoing statement, reads as follows:

"It is not to be understood that all of these persons were in school on April 15, or that they were simultaneously attending school at any time during the period. They represent the whole number who had any relation as pupils to the schools of the country during this time, and may, for brevity, be designated as persons attending school in 1909-10. Though the period falls from two to two and a half months short of the entire school year 1909-10, the number of persons who enter school in April, May, and June of any school year who have not been at school earlier in the year is an insignificant part of the whole enrollment. Hence the period covered by the census enumeration can be regarded as practically identical with the school year."

In more detail, the school enrollment, with reference to the corresponding population of school age, is set forth in the following table, also derived from the final census report for 1910:

POPULATION OF SCHOOL AGE AND SCHOOL ENROLLMENT, 1909-10 (U. S. CENSUS)

Age Period.	Population 1910	Persons Attending School, 1909-10	
		Number	Per Cent.
Total.....	91,972,266	18,009,891	19.6
Under 6 years.....	12,666,762	396,431	3.1
6 to 20 years.....	27,750,599	17,300,204	62.3
6 to 9 years.....	7,725,234	5,678,320	73.5
10 to 14 years.....	9,107,140	8,028,662	88.2
15 to 20 years.....	10,918,225	3,593,222	32.9
15 to 17 years.....	5,372,176	2,748,386	51.2
18 to 20 years.....	5,546,049	844,836	15.2
21 years and over.....	51,554,905	313,256	0.6

In the above table the facts are unfortunately not given by single years of life, which would be desirable for the purpose of showing precisely the number of persons at school or enrolled for school purposes during each year of the educational period, 5-19 years, inclusive. The table, however, is fully sufficient for the present purpose to emphasize the fact that out of approximately 30,000,000 persons of school age, 5-19 years inclusive, 62 per cent., or from about 18,000,000 to 20,000,000, are actually at school and, therefore, subject to the physical, mental and moral strain of school life.

The mortality returns of the United States are limited to the so-called registration era, which includes the states and cities for which the

death certificates are accepted by the Division of Vital Statistics of the Census Office. The population of this area in 1911 was 59,275,000, equivalent to 63.1 per cent. of the total population of the continental United States. The actual area of the so-called registration states for 1911 represented, however, only 37.2 per cent. of the total land area of the United States, so that for a considerable section, chiefly rural, of course, we at present have no trustworthy and absolutely conclusive information regarding the local death rate from all causes and from particular causes in detail. It is, therefore, undoubtedly somewhat hazardous in statistical practice to accept the returns for the registration area as conclusive for the country at large but for the time being there is no alternative. It is safe, however, to assume that in any event the conclusions are not likely to be seriously in error with respect to the principal causes of death, and that the margin of doubt affects chiefly the less important causes, or such, for illustration, as are limited by less than 1,000 deaths per annum in the registration area. It has seemed advisable, however, for the present purpose, to estimate the probable mortality for the country at large, and subject to the foregoing words of caution, the conclusions may be accepted with confidence as being approximately correct.

The total number of deaths in the registration area during the year 1911 was 839,284. For ages 5-19 inclusive, this mortality was distributed as follows:

MORTALITY, AGES 5-19.

U. S. REGISTRATION AREA, 1911.

Ages	Reg. Area. No. Deaths	Per Cent.	Estimate for the Continental U. S.
5-9.....	18,112	35.1	28,749
10-14.....	12,337	23.9	19,583
15-19.....	21,154	41.0	33,578
	51,603	100.0	81,910
5-19.....	51,603	6.1	81,910
All other ages.....	787,681	93.9	1,250,287
All ages.....	839,284	100.0	1,332,197

It is shown by this table that during the year 1911 there were in the registration area 51,603 deaths at ages 5-19, of which 35.1 per cent. occurred at ages 5-9, 23.9 per cent. at ages 10-14, and 41.0 per cent. at ages 15-19. Of the mortality at all ages 6.1 per cent. occurred at the age period 5-19 years inclusive. When these statistics are applied to the total population of the United States as estimated by the Census Office for the year 1911 at 93,927,000, it is shown that the probable total number of deaths, ages 5-19, in the entire continental United States during that year was 81,909, of which 28,749 were deaths at ages

5-9, 19,583 at ages 10-14; and 33,578 at ages 15-19. In round figures, therefore, the mortality problem of children and young persons of school age is represented by about 100,000 deaths per annum, of which a very considerable number and proportion fall strictly within the preventable class.

Before proceeding to a discussion in detail of the causes of death at ages 5-19, and their relation to modern methods of prevention and sanitary control, the following table of comparative death rates is included for the purpose of convenient reference and comparison:

COMPARATIVE MORTALITY RATES, BY DIVISIONAL PERIODS OF LIFE.

U. S. REGISTRATION AREA, 1900-1911.

	Males		Females	
	1900	1911	1900	1911
Under 1 year.....	178.4	138.6	145.0	112.1
1 to 4 years.....	20.4	13.3	19.1	12.2
Under 5 years.....	54.1	39.8	45.7	33.3
5 to 9 years.....	4.7	3.4	4.6	3.1
10 to 14 years.....	2.9	2.4	3.1	2.1
15 to 19 years.....	4.9	3.7	4.8	3.3
20 to 24 years.....	7.0	5.3	6.7	4.7
25 to 34 years.....	8.3	6.7	8.2	6.0
35 to 44 years.....	10.8	10.4	9.8	8.3
45 to 54 years.....	15.8	16.1	14.2	12.9
55 to 64 years.....	28.8	30.9	25.8	26.0
65 to 74 years.....	59.5	61.6	53.7	55.1
75 years and over.....	145.9	147.4	139.3	139.2

Limiting the analysis of this table to the three divisional periods of life within the scope of the present discussion, it appears that at ages 5-9 the male death rate has decreased during the intervening decennium from 4.7 per 1,000 of population to 3.4. The death rate at ages 10-14 decreased from 2.9 to 2.4; but at ages 15-19 there was a decline from 4.9 to 3.7. The corresponding decreases in the female death rate from 4.6 to 3.1 per 1,000; at ages 10-14, from 3.1 to 2.1; and at ages 15-19, from 4.8 to 3.3. In other words, the death rates of 1911 as compared with 1910 were, for males, 72 per cent. at ages 5-9, 83 per cent. at ages 10-14, and 76 per cent. at ages 15-19; and for females, 67 per cent. at ages 5-9, 68 per cent. at ages 10-14, and 69 per cent. at ages 15-19. It is therefore shown that there was a larger relative decline in the mortality of females than of males, and that the least decline occurred for males at ages 10-14, when, however, the actually attained death rates are relatively very low. The table is of interest in further emphasizing the well-known fact that commendable progress has been made in the public health of the United States during the past decade, and that this improvement has been of no inconsiderable advantage to the population of school age, or from 5-19 years inclusive.

It would obviously be impossible in a discussion of this kind to include all of the numerous causes of death which affect the population at ages 5-19. I have therefore limited the discussion to thirty-seven principal causes, represented by at least 250 deaths in the registration area during the year 1911. These thirty-seven causes are represented by 46,524 deaths out of a total of 51,603 deaths from all causes. At ages 5-9 the thirty-seven causes are represented by 16,236 deaths, or 89.6 per cent. of the 18,112 deaths from all causes at this period of life. At ages 10-19 the thirty-seven causes are represented by 30,288 deaths, or 90.4 per cent. of the 33,491 deaths from all causes at this period of life. The details are presented in tabular form in Appendix A.

I am not aware of any similar analysis having heretofore been made of the mortality of the age period 5-19 years by the principal causes of death. Some of the results set forth are certainly suggestive of a very considerable possibility of a further and material reduction in the mortality of child life and the early period of adolescence. According to the table the leading cause of death at ages 5-19 was tuberculosis of the lungs, represented by 7,394 deaths, or 14.3 per cent. of the mortality from all causes at this period of life. The next most important cause of death was accidents, represented by 7,142 deaths, or 13.8 per cent. of the mortality from all causes at ages 5-19; the third leading cause was diphtheria and croup, represented by 3,661 deaths; followed by typhoid fever, with 3,298 deaths; organic diseases of the heart, with 3,021 deaths; and appendicitis and typhilitis, with 2,119 deaths. In other words, the causes of death during the period of school life are, in the order of their importance, according to American experience (1) tuberculosis of the lungs, (2) accidents, (3) diphtheria and croup, (4) typhoid fever, and (5) organic diseases of the heart. These five causes account for 24,516 deaths out of a total of 51,603 deaths from all causes at ages 5-19, or 47.1 per cent. With the exception of organic diseases of the heart, of which, however, also a fair proportion are within the preventable class, the other four causes are largely preventable and within the scope of federal and state control in matters of public health. The larger significance of these conclusions, however, is brought out by the table in Appendix B, in which the mortality by thirty-seven specified causes has been estimated for the entire continental United States, separately for each of the two periods, 5-9 years and 10-19 years, and in the aggregate for the period 5-19 years considered as a group. On the basis of this estimate it appears that during 1911 there were approximately 81,909 deaths from all causes among persons of school age, and of this number 73,843, or 90.1 per cent., were deaths attributable to the thirty-seven specified causes. The table would seem to warrant the conclusion that at the present time there are annually in the United

States, among children and young persons of school age, with estimates brought down to 1913, 12,229 deaths from tuberculosis of the lungs, 11,812 deaths from accidents, 6,056 deaths from diphtheria and croup, 5,455 from typhoid fever, 4,996 from organic diseases of the heart, 3,504 from appendicitis and typhlitis, 3,481 from scarlet fever, 2,648 deaths from lobar pneumonia, and 2,301 from ill-defined forms of pneumonia. These are the principal causes of death and with few exceptions they all fall strictly within the field of preventive medicine and scientific methods of public hygiene.

The table presents some very interesting medical and moral problems in the minor causes of death, which, however, require on this occasion no extended discussion. The mortality from malaria is unquestionably underestimated in that the non-registration area of the United States includes the entire rural South, where malaria continues to be more or less common, especially, of course, in the low-lying and ill-drained lands of the coastal plain and the delta region. The mortality from tetanus, represented by 575 deaths in 1911, is also probably an underestimate but no thorough inquiry has been made into the geographical distribution of what is, without question, a strictly preventable disease. The mortality from cancer, represented by 462 deaths at ages 5-19, is of special interest to students of the subject of malignant diseases, since as a general principle of medicine, it is generally assumed that cancer is of comparatively rare occurrence during the early years of life. As shown by the table, there were approximately 127 deaths from cancer at ages 5-9, and 335 at ages 10-19. The mortality from acute articular rheumatism is relatively high and represented by 1,660 deaths at ages 5-19, and the same conclusion applies to diabetes, represented by 980 deaths. Both of these causes are probably closely related to erroneous methods of nutrition, and possibly the same conclusion applies to acute nephritis and Bright's disease, represented, respectively, by 910 and 1,501 deaths during the year 1911.

Acute anterior poliomyelitis is represented by 397 deaths in 1911, but the variable incidence of this disease does not warrant definite conclusions on the basis of a single year, since its epidemic occurrence might easily double or treble the annual mortality. Epilepsy is represented by 636 deaths. The probable close relation of many cases of epilepsy to uncorrected eye-strain suggests far-reaching possibilities of preventing what must be considered one of the most lamentable causes of death in childhood and early adolescence. The large loss of life from appendicitis, represented by 3,363 deaths, suggests the obvious neglect of early operative treatment, which, according to absolutely trustworthy statistics, is entirely successful in the overwhelming majority of cases. The mortality from simple peritonitis, represented by 574 deaths,

puerperal sepsis, represented by 638 deaths; and puerperal albuminuria, with 417 deaths, all suggest shortcomings in medical practice or neglect or delay in medical attendance, since in a large majority of cases these diseases also fall strictly within the preventable class. Deplorable aspects of early adolescence are revealed by 632 deaths from suicide at ages 10-19, although there would seem to be no very conclusive evidence that child suicides are materially on the increase, as is apparently the case in certain European countries. There can be no question of doubt, however, that many suicides could be prevented by more skillful attention to obvious evidences of abnormal or disturbed mentality, the symptoms of which have been so admirably described in the monumental work on "Adolescence," by Stanley Hall. The fact that during 1911 there should have been 560 homicidal deaths of children and young persons, reflects the low moral standard of the entire United States in the increasing disregard for the sanctity of human life. As brought out by my analysis of the homicide record of American cities, the rate has rapidly increased from an average of 4.9 per 100,000 of population during the decade ending with 1892 to 7.5 for the decade ending with 1912.

Numerically, however, of most importance are the three causes first referred to, that is, tuberculosis of the lungs, accidents, and diphtheria and croup. The problem of tuberculosis has fortunately been made a matter of nation-wide concern during recent years, although as yet insufficient attention has been given to the occurrence of tuberculosis in infancy and early childhood. The fact is frequently overlooked that the proportionate mortality from tuberculosis of the lungs is highest at ages 25-34, and there are the most convincing reasons for accepting the view that the disease is contracted, as a rule, during early infancy or early adolescence. The urgency of more scientific research into the causes of tuberculosis in infancy and childhood, and the best possible methods of prevention, might properly be suggested to the National Association for the Study and Prevention of Tuberculosis, which has rendered such conspicuous service in bringing about a general reduction in the death rate from this widespread and deplorable disease. The problem, however, of providing more adequately and more in conformity to medical requirements, for the needs of tuberculous school children, is strictly the concern of educational authorities, and reference may appropriately be made here to the admirable discussions of the subject in the annual report of the Medical Officer (Education) of the London County Council, and the Chief Medical Officer of the Board of Education of England and Wales.

It would serve no practical purpose to discuss the prevention of diphtheria and croup and other acute infectious diseases of childhood and early adolescence, since more or less adequate public attention is

being given to these subjects by the public health authorities throughout the country, but it may properly be emphasized in conclusion that the most neglected field of child life in its relation to preventable mortality is the lamentable annual loss of young lives by accidents, which in the overwhelming majority of cases are unquestionably the result of gross indifference and neglect on the part of either the parents, the public authorities, or of foolish daring and exploits on the part of the children, which could be prevented in at least a number of cases by proper attention to the educational aspects of accident prevention. It is much to the credit of the American Museum of Safety for having originated a nation-wide campaign in the safety instruction of school children, and too much can not be said in praise of the hearty coöperation of the educational authorities of the State and City of New York. As far as I know, the safety education of school children has for the first time been made compulsory in the State of New Jersey by a very recent act of the Legislature, so that for the present the actual results of such education can not be reported upon. It requires, however, no very extended knowledge of the deplorable details of accidents to child life to bring out the almost infinite possibilities of life saving in a direction which, as previously stated, is probably the most neglected phase of the modern problem of the conservation of human life and health.

The mortality of children and young persons of school age involves many other than medical considerations. There is a serious economic loss involved in the needless waste of children's lives, readily shown by a brief consideration of the normal cost of education and the resulting waste to the community in the case of children educated at public expense for a number of years but curtailed in their normal expectation of life by preventable deaths in early childhood or early adolescence. The average cost of public school education, ages 5-19 years, is approximately estimated by the Bureau of Education at \$35 per annum. On the assumption that there are 85,000 deaths per annum at ages 5-19 in the United States at the present time, and that the average duration of education previous to death is five years, the net estimated loss per pupil would be \$175, and \$14,875,000 for the entire mortality. This loss is absolute in every sense of the word, and may be restated in the words that, annually some 85,000 children die in this country at a period of life when they have received, more or less at public expense, a considerable amount of costly education, without any actual or prospective financial returns to the community. The education authorities are, therefore, equally interested with those responsible for the public health in the more effective conservation of child life as an economic problem, while to parents and the community at large the preventable mortality of children is primarily a question of improved methods of the medical

supervision of school children, of the more effective control of acute infectious diseases, of the elimination of needless accidents, and higher standards of personal hygiene in childhood and early adolescence.

APPENDIX A.

MORTALITY AT SCHOOL AGES.

(U. S. REGISTRATION AREA, 1911.)

Diseases	Ages 5-9	Per Cent.	Ages 10-19	Per Cent.	Ages 5-19	Per Cent.
Typhoid fever.....	747	4.1	2,551	7.6	3,298	6.4
Malaria.....	104	0.6	166	0.5	270	0.5
Measles.....	501	2.8	303	0.9	804	1.6
Scarlet fever.....	1,485	8.2	620	1.8	2,105	4.1
Whooping cough.....	243	1.3	32	0.1	275	0.5
Diphtheria and croup.....	2,778	15.3	883	2.6	3,661	7.1
Influenza.....	99	0.6	232	0.7	331	0.6
Tetanus.....	151	0.8	211	0.6	362	0.7
Tuberculosis of lungs.....	579	3.2	6,815	20.3	7,394	14.3
Acute miliary tuberculosis.....	106	0.6	544	1.6	650	1.3
Tubercular meningitis.....	606	3.3	490	1.5	1,096	2.1
Abdominal tuberculosis.....	142	0.8	374	1.1	516	1.0
Other forms of tuberculosis.....	180	1.0	456	1.4	636	1.2
Cancer (all forms).....	80	0.4	211	0.6	291	0.6
Acute articular rheumatism.....	419	2.3	627	1.9	1,046	2.0
Diabetes.....	153	0.8	464	1.4	617	1.2
Simple meningitis.....	368	2.0	302	0.9	670	1.3
Cerebrospinal meningitis.....	240	1.3	217	0.6	457	0.9
Acute anterior poliomyelitis.....	148	0.8	102	0.3	250	0.5
Epilepsy.....	82	0.5	319	1.0	401	0.8
Acute endocarditis.....	214	1.2	413	1.2	627	1.2
Organic diseases of the heart....	830	4.6	2,191	6.5	3,021	5.9
Broncho-pneumonia.....	622	3.4	336	1.0	958	1.9
Lobar-pneumonia.....	530	2.9	1,071	3.2	1,601	3.1
Pneumonia (undefined).....	553	3.1	838	2.5	1,391	2.7
Diarrhoea and enteritis.....	413	2.3	179	0.5	592	1.1
Appendicitis and typhlitis.....	588	3.2	1,531	4.6	2,119	4.1
Intestinal obstruction.....	142	0.8	186	0.6	328	0.6
Simple peritonitis.....	108	0.6	254	0.8	362	0.7
Acute nephritis.....	253	1.4	320	1.0	573	1.1
Bright's disease.....	239	1.3	707	2.1	946	1.8
Puerperal sepsis.....	...	...	402	1.2	402	0.8
Puerperal albuminuria.....	...	...	263	0.8	263	0.5
Disease of bones.....	118	0.7	200	0.6	318	0.6
Suicides.....	...	...	398	1.2	398	0.8
Accidents.....	2,384	13.2	4,758	14.2	7,142	13.8
Homicides.....	31	0.2	322	1.0	353	0.7
Total, 37 specified causes.....	16,236	89.6	30,288	90.4	46,524	90.2
All other causes.....	1,876	10.4	3,203	9.6	5,079	9.8
Total deaths at school ages.....	18,112	100.0	33,491	100.0	51,603	100.0
Total deaths at all ages, U. S. Registration Area.....						839,284

APPENDIX B.

ESTIMATED MORTALITY AT SCHOOL AGES.

(CONTINENTAL U. S., 1911.)

Diseases	Ages 5-9	Ages 10-19	Ages 5-19
Typhoid fever.....	1,186	4,049	5,235
Malaria.....	165	263	428
Measles.....	795	481	1,276
Scarlet fever.....	2,357	984	3,341
Whooping cough.....	386	51	437
Diphtheria and croup.....	4,410	1,402	5,812
Influenza.....	157	368	525
Tetanus.....	240	335	575
Tuberculosis of lungs.....	919	10,817	11,736
Acute miliary tuberculosis.....	168	863	1,031
Tubercular meningitis.....	962	778	1,740
Abdominal tuberculosis.....	225	594	819
Other forms of tuberculosis.....	86	724	1,010
Cancer (all forms).....	127	335	462
Acute articular rheumatism.....	665	995	1,660
Diabetes.....	243	737	980
Simple meningitis.....	584	479	1,063
Cerebrospinal meningitis.....	381	344	725
Acute anterior poliomyelitis.....	235	162	397
Epilepsy.....	130	506	636
Acute endocarditis.....	340	656	996
Organic diseases of the heart.....	1,317	3,478	4,795
Broncho-pneumonia.....	987	533	1,520
Lobar-pneumonia.....	841	1,700	2,541
Pneumonia (undefined).....	878	1,330	2,208
Diarrhoea and enteritis.....	656	284	940
Appendicitis and typhlitis.....	933	2,430	3,363
Intestinal obstruction.....	225	295	520
Simple peritonitis.....	171	403	574
Acute nephritis.....	402	508	910
Bright's disease.....	379	1,122	1,501
Puerperal sepsis.....	...	638	638
Puerperal albuminuria.....	...	417	417
Disease of bones.....	187	317	504
Suicides.....	...	632	632
Accidents.....	3,784	7,552	11,336
Homicides.....	49	511	560
Total, 37 specified causes.....	25,770	48,073	73,843
All other causes.....	2,979	5,087	8,066
Total deaths at school ages.....	28,749	53,160	81,909
Total deaths at all ages, continental U. S.....			1,332,197

NOTE.—The above figures should be increased by approximately 4.2 per cent. to get the estimates for 1913.

THE HYGIENE OF THE CHILD AT THE PERIOD WHEN SCHOOL LIFE BEGINS

BY

ARTHUR K. BEIK

On the basis of our knowledge of educational practice for centuries, and also of modern customs and legal requirements, we have come to designate the period from about the completed fifth to completed seventh year of life as the "school entrance age" or "beginning school period." It is at the age of five, six or seven years that most children begin their formal school work. With the child at this period of life many problems of the pedagogy of the school grades and most of those of school hygiene, properly so called, begin. For school hygiene, therefore, the "beginning school period" is all important.

It is the purpose of this paper to emphasize especially the hygienic significance of some developmental phenomena that are prominent at about this time of life.

A number of authors have marked the sixth or seventh or eighth year as a time of nodality of development, usually on the basis of some one developmental characteristic, as, for example, growth, dentition or the like. In a paper appearing in the Pedagogical Seminary for September, 1913, I have attempted to collect from various sources evidence to show whether such nodality or transition of development does occur. As there indicated, the question can not be positively answered in the affirmative, yet a group of facts collected from numerous investigations suggests very strongly that it should be so answered.

A number of investigations of growth have shown in these years a variability in the rapidity of height increase, the nature of which is not fully understood. A similar variability in weight increase is suggested in many cases, though there is less real knowledge of its nature or meaning, largely owing to the fact that weight is such a variable factor.

According to Quain's *Anatomy*, the skull grows rapidly up to the age of seven years, when certain parts reach their adult size. The remaining portions grow slowly until about the time of puberty, when there is another rapid growth. Paralleling this, brain weight increases rapidly up to about the same age, after which the increase is slower.

The eyeball, which first develops as a modification of the brain substance, is even more precocious in its development. It is credited with having reached adult size in the sixth year of life.

Dentition presents some remarkable developmental phenomena. With the eruption of the first permanent molars, usually in the seventh year, there is begun the change in which the entire set of temporary teeth are cast aside and replaced by a more numerous, adult sized, permanent set. Accompanying the change of teeth there occurs remarkable development of jaws and related facial portions, with resulting changes in facial proportions and facial expression. Size of face to size of skull is different from this time on, continuing to change, of course, until second dentition is practically completed. Enormous demands are thus made upon the metabolic processes in these regions. Within the jaws there must be redistribution of vascular and neural supply and a rearrangement of the fine bony trabeculae to offer proper resistance along the new lines of application of muscular forces used in mastication.

Certain anatomists state that the larynx grows rapidly up to the sixth year, after which the growth is slow until about the time of puberty. The range within which pure tones can be sung widens more rapidly from the age of seven on. At this same time also differentiation of the sexes may be noted in the averages of voice range, that of the girls being wider.

Certain powers which are rather of a psychological nature, but which rest upon a structural foundation in the nervous system, seem to indicate a difference of organization after the period here under consideration. Tests of precision in finger movements have shown a remarkable increase in neuro-muscular control between the ages of six and eight. The "squint" which accompanies the early efforts of the child to fuse the images from the two eyes in binocular vision, if not corrected until after five to seven years of age, becomes so deeply grounded as to constitute a pathological condition difficult to cure. Similarly, infantile babble, if continued after this time, is considered pathological. The power to retain visual imagery seems to be readily lost in persons who lose their sight before this period of life, while in those who lose their sight later, it is much more likely to be retained.

While this is not a list of entirely new facts, when thus grouped together they seem to take on a new significance. Whether all these phenomena are due to one fundamental developmental impulse or whether some follow as secondary results from changes in one or two principal phases, as, for example, dentition, is a question that cannot be answered on the basis of the facts at present available. Averages for the time of greatest prominence are not the same for all the phenomena listed, nor does any one of them appear at exactly the same age in all children. Variabilities are great, indicating that here, as at the pubescent period, development is not equally rapid in all children. Because of these things, cor-

relations, not to mention causes, can hardly be worked out from the data of individual investigations up to the present time. As stated above, it therefore can not be proved that there is a transition of a general nature, but the fact that these several transitional features stand so closely grouped with reference to time of occurrence strongly suggests that this is the case.

Regardless of the way in which the above question may finally be answered, the facts here cited furnish a basis for a number of hygienic suggestions. That so many radical changes in development occur so closely grouped during this short period of life would seem to be sufficient ground for the contention that attention to free, normal physical development is the thing of prime importance. The imposition of school duties at all onerous in their nature upon a child who is undergoing these radical changes in his development is fundamentally wrong.

Again, bearing in mind the great individual variations in rapidity of development, it must follow that qualifications for school entrance based upon chronological age, merely, and that do not take into consideration the stage of development reached by the child, are wrong and need revision. Compulsory school laws also need revision along the same lines.

If we assume that a causal relationship lies beneath the correlations of physical development and school success found in such investigations as those of Porter, Smedley, Crampton, Quirsfeld, Rietz, and others, the number of retarded pupils and repeaters throughout the upper grades would be tremendously lessened. An enormous amount of mental and physical injury would thus be obviated.

Out of this must grow the problem of a method for measuring the development of the entering school child. It is a problem which challenges the school hygienist who would begin with school hygiene where school hygiene begins, and it is certainly one worth solution. Beginnings in its solution have been made in the investigations from which much of the material here cited has been taken. For the most part, however, work has been too much the investigation of individual phenomena, and of too large age groups. Grouping the children in years will not show the smaller differences characteristic of this period of life. There is needed much more study on the individual plan, similar to that used some years ago by Quirsfeld.

I believe that much more accurate knowledge of development could be gained, if, in investigations, children were grouped according to physical types, as is done in the case of head measurements in craniometry.

From another viewpoint, comparison of facts regarding development of the beginning school child is of great interest. In the article to which

I have referred above I have shown that on the average the girl is relatively more advanced in her physical development at this period of life than the boy of equal age.

A number of comparisons indicate that this is true. According to available tabulations, the girl has attained a greater percentage of post-pubescent height and also of post-pubescent weight than the boy of equal age. Comparison of curves give a strong suggestion that the girl of this age has acquired a greater percentage of adult brain weight than the boy. Eruption of the permanent teeth is earlier, on the average, in the girl than in the boy, as shown by data from extended investigations. From rather limited data it appears that ossification of the bones progresses more rapidly in the girl than in the boy. Experiments in neuro-muscular control show girls to be capable of better control of movements than boys. Comparisons have shown them to have gained a greater percentage of post-pubescent strength than boys of equal age. Range of voice differentiates from this time on, that for girls being wider than that of boys. Stuttering, which develops in most cases in the early years, has been found in many investigations to be more prevalent in males than in females. The latter are also credited with being able to learn to talk earlier.

As indicated by the data from investigations of most of these phases, differences between the sexes which are noticeable at the beginning school age grow progressively greater with advancing age.

From these facts it is clear that the development of the two sexes does not run parallel up to the pubertal years, at which time the girl forges ahead, as has often been stated. The girl is relatively more advanced in physical development than the boy at the time they usually enter school.

To the school hygienist these facts present again some problems. How great is the difference in development at the school entrance age? If there is such a difference and it grows progressively greater with advance in age, what does this signify concerning the amount and kind of school work that can legitimately be required of boys and girls of equal age, or, as often occurs, of equal age and in the same classes? When should the sexes be separated and given different amounts and different kinds of work? If quantitative differences are thus evident in physical development during the school years, should not further investigations search more closely into the question of whether qualitative differences, both as regards mental and physical development, are also present during these years?

Aside from the more general suggestions and problems that have been pointed out above, a number of specific things regarding development of the child at the school entrance period should be emphasized.

It is all important that proper care should be exercised to prevent a number of possible abnormalities.

Preservation of the teeth is a matter that no child should be allowed to neglect. Carious temporary teeth or carious first molars are liable to cause ill health, crooked permanent teeth with malocclusion and resulting abnormalities in the development of the jaws. Similar results may follow from retention of temporary teeth. Poorly preserved crowns may cause lack of development of the jaws, impaction of permanent teeth, or eruption in abnormal positions, as well as any of a number of other ills, such as infections.

Adenoids, when present, should be removed before this period of life is past. If left, mouth breathing with attendant ills is liable to result. Among these is to be noted especially that the abnormal muscular pressure or lack of pressure from tongue and lips is liable to cause malocclusion of the teeth, and ill-formed palate.

The limited range of the voice during these years is such as to necessitate care to prevent its being overstrained.

Wrong habits, such as squint, should be corrected before the school age is past, to prevent their becoming so ingrained as to constitute pathological conditions.

The tonsils should be watched and in case of slight enlargements given prophylactic treatment. Dr. Wright of Harvard finds that by so doing, temporary enlargements without inflammation, which are liable to occur during the time of eruption of the molars, are caused to disappear after the eruption of those teeth in a high percentage of cases.

The eyes should not be subjected to the strain of reading until after this period of life. Dr. Burnham of Clark University has already called attention to the fact that this is the time when the eye first normally approaches an emmetropic condition. Earlier than this the arm of the child is too short to hold the book a proper distance from the eyes. Reading should therefore be left until the eye is sufficiently developed to function without being subjected to strain.

I have perhaps dwelt sufficiently upon these topics to give emphasis to the fact that the most important thing for the child throughout all his earlier years is normal development. Eye strain, lack of sufficient pure air, cramped positions, lack of opportunity to exercise the muscles in free play, any or all of which are liable to be found among school conditions, should be left until there is no doubt that the child has acquired a physical development capable of overcoming their ill effects.

Summary. In closing, the principal conclusions of this paper may be briefly summarized as follows:

1. Though not sufficient to give definite proof, a number of facts have been cited which suggest strongly that at the age of six or seven years there is a transition in the physical development of the child.
2. Individual variations in the rapidity of development at this period of life are sufficiently great to render grading for entrance to school on a basis other than that of stage of physical and mental development fundamentally wrong.
3. "Repeating" and retardation in the upper grades would be lessened by making entrance to school depend upon stage advancement in physical and mental development rather than upon chronological age.
4. Compulsory school laws demanding attendance at school on the basis of an age qualification alone are wrong and need revision.
5. Girls are more advanced, relatively, in their physical development than boys of equal age at the period of usual school entrance.
6. More accurate investigation of the developmental features of both boys and girls at the school entrance age and later are needed.
7. The period of life under consideration is a time when attention to specific developmental phases is all important. Care is needed to prevent abnormalities of development and injuries liable to result from lack of care of special organs, such as teeth, eyes and tonsils.
8. The all important thing for the years up to and including the sixth, seventh and eighth is normal development. Later school entrance is to be chosen rather than early school entrance with a risk of sacrificing the health and the normal development of the child.

THE BOY AND THE TOBACCO PROBLEM

BY

WILLIAM A. MCKEEVER

Before entering into a direct discussion of the tobacco problem as related to the American boy, let us consider for a few moments the tobacco-using situation as it exists among the men of our great country to-day. We cannot grapple with this situation until we have first appreciated its full magnitude, and have learned definitely to understand what the practice of tobacco using on the part of boys may be reasonably expected to lead to by the time they have attained unto their manly powers.

In dealing with the practice of tobacco using among boys, we are in an anomalous, if not a precarious, situation. In making our plea in behalf of an improved condition for these boys we must appeal largely to an audience of men, the fathers of these youths, who are in the majority of cases already thoroughly confirmed in the use of tobacco. We are, therefore, under the necessity of condoning and apologizing for this evil practice among men, while we ask these same men to cooperate with us in eliminating it from the lives of their boys. The situation is all but a disheartening one, and yet I believe that we can meet and grapple with it successfully. But first let us consider the tobacco situation as it exists to-day.

Burning Up the Bread. The greatest conflagration of modern times is that attested by the mighty volume of smoke belching forth from the mouths and nostrils of some 20,000,000 men and boys living within the confines of this enlightened American commonwealth. It destroys more wealth in a year than all the great and destructive fires that have occurred in this country during the past three-quarters of a century. Note the following great fires:

1835.	New York City.....	loss	\$20,000,000
1848.	Albany, N. Y.....	loss	30,000,000
1849.	St. Louis, Mo.....	loss	30,000,000
1871.	Chicago, Ill.....	loss	200,000,000
1872.	Boston, Mass.....	loss	80,000,000
1904.	Baltimore, Md.....	loss	70,000,000
1906.	San Francisco, Cal.....	loss	400,000,000
1912.	The great tobacco conflagration.....	loss	1,200,000,000

The tobacco fire for 1912 entailed a loss of \$370,000,000 more than all the others put together. We are burning more than ever this year.

Yes, this consuming fire burns up barrels of money, mountains of bread, and countless measures of human character. "A luxury" is what we men have been pleased to call tobacco. And then we have proceeded to place a heavy revenue tax upon it as if it were something that men buy with their surplus earnings over and above what is spent for the necessities and comforts of life. But my contention is that tobacco might better be classed as "groceries," because of the fact that in a million and one instances the money paid for it comes out of the small family allowances and cuts down by so much the sum available for feeding decently the women and children in the home. And, mind you, this particular form of "groceries" is not bought and paid for *after* the family grocery list is made out, and provided there is anything left for it. Tobacco belongs at the *top* of the grocery account. It is bought and paid for first and the remainder of the income apportioned to the balance of the grocery budget.

What Fools We Men Are. Should we men of America not have ourselves called before a board of alienists and be tried for our sanity? We rave and whine by turns about the high cost of living, and then we proceed to strike a match and burn up a good loaf of bread—an act which makes the high cost of living seem for the moment less oppressive. We read with not a little sympathy and discomfiture the detailed accounts of certain of the 10,000,000 American women and children who are said to go to bed hungry every night of the week, and then we burn up another five-cent loaf of bread—again an act which makes our pangs of sympathy for the hungry millions seem much easier for us to bear.

It has been estimated by The American Federation of Sex Hygiene that the men of this country are now expending \$1,200,000,000 annually for tobacco. (See *Literary Digest*, Oct. 12, 1912.) Now, let us change this all into bread money and see what it will amount to. Fractional answers are omitted for the sake of simplicity.

\$1,200,000,000 is the amount of money expended, directly and indirectly for tobacco in the United States, for the pleasure of us men only.

This sum of money is equivalent to more than \$13 per capita for our entire population.

It would buy 300 loaves of bread for every man, woman and child in the country, or 30,000,000,000 loaves in all.

It is estimated that ten loaves of bread will occupy one cubic foot of space, hence we have 3,000,000,000 cubic feet of bread burnt up annually.

Now, suppose we make this bread all into one big cubical loaf, we should have a veritable mountain slightly more than a quarter of a mile in each of its dimensions.

Suppose we reduce the 30,000,000,000 one-pound loaves to ton loads, we should then have 15,000,000 wagon loads of bread.

Suppose we employ teams to haul these ton loads of bread. Strung out close behind one another there would be 60,000 miles of teams hauling bread—nearly two and one-half times around the earth.

Now, a team will haul a ton load thirty miles per day, fast driving, over ordinary roads. So it would require the procession of bread wagons more than five and a half years to pass a given point.

Then, suppose we reduce this bread to ten-inch loaves, strung out end to end. They would extend a distance of 60,000,000 miles, two-thirds of the way from the earth to the sun.

Estimate the price of wheat at a dollar per bushel. Then, our tobacco money will buy 1,200,000,000 bushels of wheat.

Kansas is one of the great wheat producing states of the nation. It would take her sixteen years to produce enough wheat to pay the annual tobacco bill for us men.

My native state (Kansas) is low in its consumption of tobacco. Government statistics show that she burns up annually only \$7,000,000 in tobacco. Some of the other states burn four times as much.

Now, the State of Kansas squanders something like \$300,000 annually as a total expenditure for school books for the children. Some of this money might be saved and spent for tobacco.

The greatest pyramid of Egypt covers thirteen acres of ground and towers up 450 feet. It is one of the wonders of the world. But it would look like a little toy block standing beside the big cubical loaf of bread described above.

The magnificent Woolworth Building, the tallest sky-scraper ever erected, could be duplicated hundreds of times and all wedged within the limits of the big loaf.

The mighty Eiffel Tower is man's effort to imitate the Tower of Babel. And yet a man standing at its topmost point would grow dizzy in an attempt to look on up to the top of the bread loaf.

At 5,000,000 Breakfast Tables. King Alcohol and the Duke of Tobacco sat down at 5,000,000 breakfast tables in America this morning—and later I hope to have much more to say about the former. They sat down and took their heavy toll of the best the table had to spare. True, in a great many cases there remained an ample supply of good things for all the other members of the group. But in millions of instances the supply remaining was poor and skimpy, and many little children had to go away with the cravings of hunger only partly satisfied.

Again, it is asked what right we men have to make such a selfish use of our incomes. The answer is not far to seek. It is purely a matter of

biography or environment, of what practices entered our lives as habits during the period of our youth. If we became thoroughly addicted to the use of tobacco during the days of our childhood or youth, then more than 90% of us will continue throughout life to be easy victims of its seductive influences. If, through some unusual circumstances, we were denied the use of tobacco until we reached the age of 21 or older, then more than 90% of us are still plodding our way through this vale of tears and tobacco fumes with only a second-hand acquaintance of what so many men call a "good smoke."

Investments Worth \$10,000. It may be conservatively estimated that the boy in his middle teens or younger who takes up the habit of smoking, thereby enters upon what will prove during a full allotted lifetime to be a tobacco investment of \$10,000. And what is the real income from such a tremendous outlay? Unquestionably the habitual smoker obtains a tremendous amount of satisfaction from his pipe. He can obtain a larger amount of precisely the same thing from the use of opium. Both of these indulgences put a man into an artificial frame of mind. They make it seem that his cares and perplexities are gone when they really are not. Smoking quiets a man's sense of responsibility to the members of his own family and to his fellowmen, if not to his Maker.

Do not misunderstand me. Thousands of good men are smokers. God's noblemen they are in many senses of the word. Indeed they are often my closest companions and friends, and I love and respect them, but I hate the habit of which they are the irreclaimable victims. Although thousands of them are better men than myself they would all be from ten to one hundred per cent. better still if they had never fallen into the grip of the tobacco habit. Little and insignificant as I am, I would be many times worse were I its victim.

But as to the money investment—for fifteen years I have made a continuous study of the tobacco habit and am fully convinced that the estimates given above are conservative as an average. Figure it out for yourself. The Duke of Tobacco is smarter than all of us. He knows that the prosperity of his business depends on the number of little innocent boys who can be taught to smoke before they are old enough to have any idea of the seriousness of the act. This iron-hearted Duke knows that if youths once become fully saturated with nicotine they will continue to pay him heavy tribute so long as they live.

Not a Dissenting Voice. In so far as I have made inquiry, in every single impartial investigation of the smoking habit among youth, I find nothing except damaging evidence against the practice. I submit the following reliable authorities:

Dr. Edwin C. Clarke, who studied two hundred students of Clarke College and found a distinctly lower scholarship among the smokers as compared to the non-smokers.

Dr. George L. Meylan, of Columbia University, who found that the ratio of failures of smokers as compared to non-smokers was ten to four.

In the study of eight hundred high school boys, P. E. Henry (See *School and Home*, March, 1912) found a school record different ranging from seventeen per cent. to twenty-eight per cent. in favor of the non-smokers.

I, myself, as the result of a careful test of the scholarship of one hundred college youths, found a difference of twenty-eight per cent. in favor of the non-smokers.

Dr. Frederick J. Pack (See *Popular Science Monthly*, Oct., 1912) studied two hundred and ten men who contested for position on a first athletic team. Ninety-three were smokers; one hundred and seventeen were non-smokers. Again the non-smokers surpassed the smokers, with a difference of thirty-two per cent.

Dr. Pack also made inquiry as to this athletic situation in fourteen other universities. Again, the non-smokers win with twelve per cent. in their favor. He also finds against the smokers, low scholarship, small lung capacity and a uniformly low degree of success in "making the team."

Prof. Jay Seaver, of Yale University, likewise reports a decidedly impaired lung capacity on the part of the habitual smoker.

Dr. Charles B. Towne (See *Century Magazine*, March, 1912) gives an array of most damaging evidences against the youthful tobacco user.

Dr. J. W. Hodge (See *Medical Century*, November, 1911) sets forth the deleterious effects of tobacco upon the habitual user. He explains that the digestion is impaired, the blood impoverished, the heart action weakened, and that the mental, moral and spiritual elements of the user's nature likewise suffer heavily.

Again in my published account of the heart action of one hundred cigarette smoking boys (See *Home Training Bulletin*, No. 1) it is shown by graphic illustrations that these boys suffer from prostrated heart action, and that they are otherwise physically weakened.

Dr. Robert N. Willson in his courageous monograph entitled "Can a Gentleman Smoke?" has presented a long array of damaging evidence against the tobacco user.

The Scientific Temperance Federation of Boston, through the medium of their Journal, have repeatedly published the accounts of scientific inquiry, all of which tended to show the same adverse effects.

Other studies in this field have established the conclusion that the

use of tobacco injures youth mentally, morally and spiritually, even more than it does physically. The following points have especially well established.

1. That cigarette smoking is closely associated with juvenile crime.
2. That cigarette-using boys fall behind in their grades and tend very strongly to drop permanently out of school.
3. That the boys who use tobacco habitually almost invariably absent themselves from the Sunday School.
4. That the tobacco habitué among boys is with few exceptions, an inhaler, is dulled in his sensibilities; and through the medium of this evil practice, is probably destined never to take any active interest in the moral, social or religious welfare of his home community.

So the evidence accumulates to substantiate the claim that tobacco is the greatest menace in the life of American youth to-day. Indeed the problem of meeting this issue is no longer a matter of scientific proofs of the deleterious effects of tobacco on growing boys. The problem with which we must deal is largely one of methodology and psychology. You may go on until doomsday adding up the evils of this practice and still the sale and consumption of tobacco among school youths will continue to increase. Wishes and decisions are of no avail except that they be acted upon. We who are fully aware of the evils of cigarette smoking among school boys continue to behave as a lot of weaklings. We have never perfected an organization to combat this evil, and much less have we done by way of devising a scientific plan for its destruction. Our groans and complaints avail nothing. We must come together and perfect a well-organized scheme for preventing the use of tobacco among minors. We have made researches as to the poisonous effects of the weed, but we have made no far-reaching inquiries as to the best scientific means of preventing its use among youths. So now I wish to commend the Kansas Method, and others as well, for dealing with this evil.

Out There In Kansas. Out in my native sunflower state we have been engaged during the past third of a century in the production of a wonderful new crop of men. Under the administration of our prohibitory amendment and laws, we have succeeded in bringing up a race of men—very many of whom are now heads of families and voters—who are total abstainers from the use of alcohol. We have banished every semblance of the saloon from the borders of our fair state. Liquor selling in Kansas is on a par with bank-breaking, highway robbery, and horse-stealing. It is practically no more in evidence before the eyes of the general public, and is little more practiced than are these other

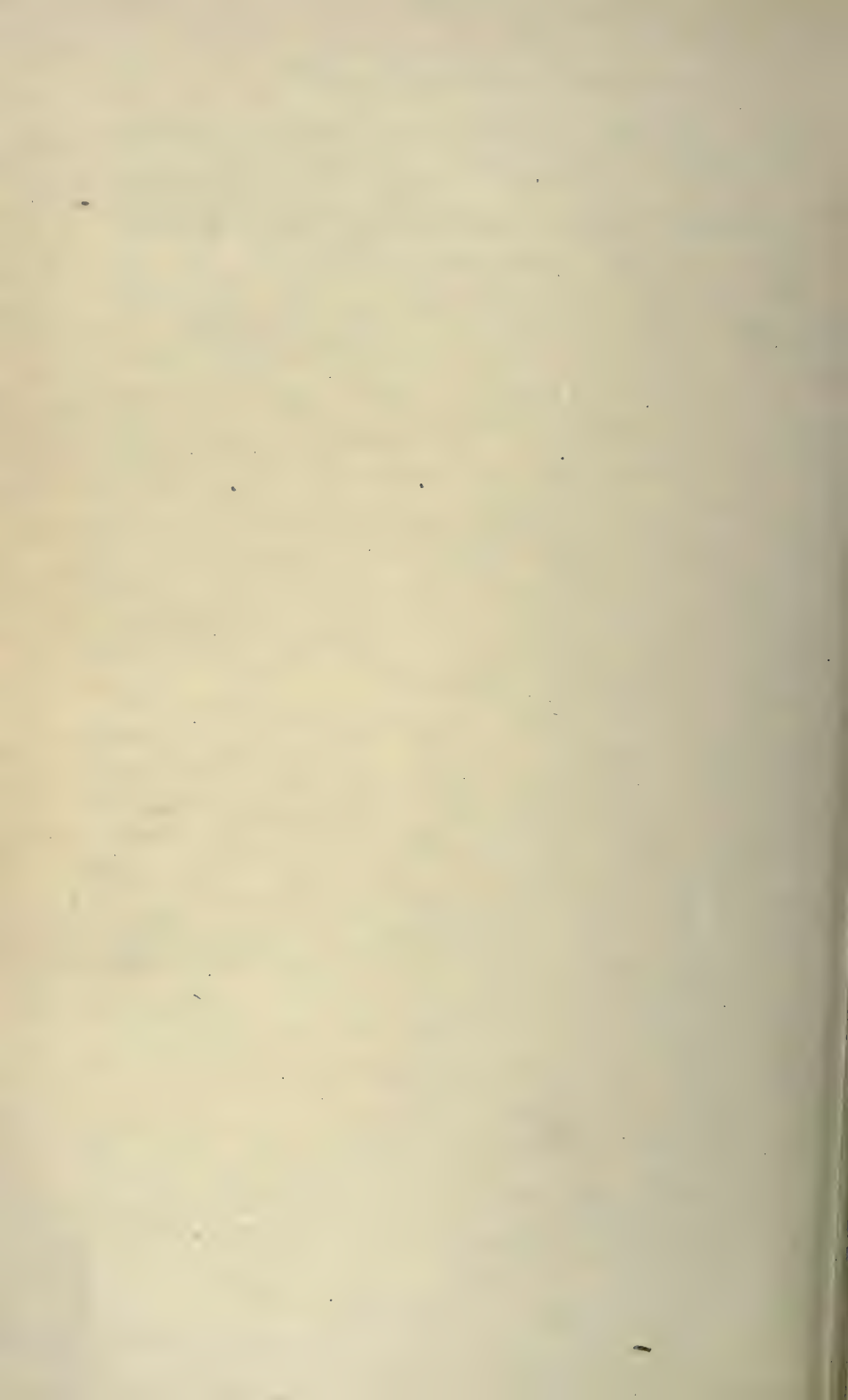
crimes. All this remarkable achievement in my state is merely the result of wise legislation, honestly enforced.

Now we have perfected a plan in Kansas whereby we hope to bring up another generation of men, who are to be total abstainers from the use of tobacco. We have perhaps the most efficient anti-juvenile tobacco using law in existence. Under penalty of a heavy fine, boys under 21 are forbidden to use tobacco in any public place, on any public highway, or on the property of any public corporation. Moreover, the person or corporation on whose premises the youth is permitted to violate the anti-tobacco law, such is subject to a fine of twenty-five dollars.

But legislation is of little value except it be backed up by some public sentiment; and that backing we have in Kansas. Even public sentiment will avail little except it be stimulated and guided by those especially appointed to look after the enforcement of the law; and that again we have. We circularize the county attorneys, the police officers, the marshals, and the constables in regard to this law, and give them the benefit of special methods of enforcement. As a result we are slowly eliminating tobacco using from the youths of our state. In the average town or village of Kansas it can be shown that a comparatively few of the minors are using tobacco at all, and these are becoming so heavily discredited in a social way and in other respects, that the practice continues to grow less frequent and less popular.

We have quietly conducted another sort of campaign against alcoholic stimulants and narcotics in Kansas. Many years ago the legislature of our state enacted a law requiring that the destructive effects of these evils be taught in all the common schools. This agency has been quietly at work now for a generation. Its helpful results are especially noticeable in respect to the liquor traffic, and not a little in respect to the tobacco evil.

What we need, therefore, is a hand-book on methods of prevention. This document should consist of a compilation of all the best-known plans for instructing youths regarding the evils of tobacco, and for otherwise preventing their beginning the habit of smoking. This hand-book should and can be placed in the possession of every teacher, all the patrons directly interested, the ministers in the local churches, and all the other workers in the field of child welfare. Who will forward such a help?



SECTION THREE

Medical, Hygienic and Sanitary Supervision in Schools

SESSION NINETEEN

Room E.

Wednesday, August 27th, 2:00 P.M.

MEDICAL INSPECTION (Part One)

DAVID SNEDDEN, Ph.D., *Chairman*

DR. L. O. WILLIAMS, Buffalo, N. Y., *Vice-Chairman*

Program of Session Nineteen

DR. LOUIS DUFESTEL, Secretary-General of the Third International Congress on School Hygiene, Paris, France. "La Nouvelle Organisation de l'Inspection Médicale des Écoles de la Ville de Paris." Read by Dr. Martel.

ROY K. FLANNAGAN, M.D., Director of Inspection, State Board of Health, Richmond, Va. "Report of the Medical Inspection of the White and Negro Schools of a Virginia County."

GEORGE W. GOLER, M.D., Health Officer, Rochester, N. Y. "Medical School Inspection in Rochester."

DR. P. STEPHANI, State School Physician, Mannheim, Germany. "Staatliches und Stadisches Schularztwesen."

DAVID SNEDDEN, Ph.D., Massachusetts Commissioner of Education, Boston, Mass. "Compulsory Medical Inspection of Schools in Massachusetts from the Administrative Standpoint."

WM. C. HANSON, M.D., Assistant to the Secretary, Massachusetts State Board of Health, Boston, Mass. "The Correlation of the Work of School Physicians and Local and State Health Officials."

DR. JOSÉ PENNA, Presidente del Departamento Nacional de Higiene, Argentina. "Infantile Hygiene, Puericulture and the Demographic Movement of the Argentine Republic."

DR. MONCORVO, JR., Director of the Institution for the Protection of Children; Chief and Founder of School Hygiene Service in Rio de Janeiro, Brazil. "Medical-Pedagogic Inspection in Rio de Janeiro." Read by Dr. Antonio Vidal.

Papers Presented in Absentia in Session Nineteen

(Read by Title)

DR. MANUEL URIBE Y TRONCOSO, Mexico City. "Resultados practicos de la Inspeccion Medica de las Escuelas en el Distrito Federal de Mexico durante los 5 ultimos anos."

ERNESTO CACACE, M.D., Professor of Peditry, Royal University of Naples, Italy. "L'Ispezione Sanitaria Scolastia in Italia."

FRANK ALLPORT, M.D., Chicago, Ill. "Necessity of Standardization and Universal Adoption of Medical School Inspection in the United States."

LA NOUVELLE ORGANISATION DE L'INSPECTION MÉDICALE DES ÉCOLES DE LA VILLE DE PARIS

BY

LOUIS DUFESTEL

(Read by Felix Martel)

En France l'inspection médicale des écoles a été consacrée par la loi organique du 30 octobre 1886, qui stipule au titre I, chapitre II, article 9: "L'Inspection des établissements d'instruction primaire publics ou privés est exercée:

§ 7. Au point de vue médical, par les médecins inspecteurs communaux ou départementaux."

Mais la ville de Paris n'avait pas attendu le vote de la loi de 1886 pour organiser une sérieuse inspection médicale de ses écoles primaires. Dès 1879 le Conseil Municipal sur le rapport du Dr. Hovelacque avait décidé la nomination de 85 médecins scolaires.

En 1883 l'organisation fut complétée. Le nombre des médecins inspecteurs fut porté à 126. Ils étaient nommés par le préfet sur une liste de présentation dressée par le maire d'accord avec la délégation cantonale. Chaque médecin avait la surveillance de 18 à 20 classes et un traitement de 800 francs par an.

Le règlement de 1883 prescrivait aux médecins de faire d'abord l'examen des locaux autres que les classes, ensuite la visite de chacune des classes, enfin l'examen des enfants, en particulier de ceux qui seraient signalés par le personnel enseignant comme présentant des symptômes d'indisposition. Il ajoutait que le médecin devait profiter de ses deux visites mensuelles pour procéder à un examen attentif et individuel des enfants au point de vue des dents, des yeux, des oreilles et de l'état général de la santé.

En réalité le médecin scolaire ne pouvait à Paris avec ce règlement, par suite du nombre trop considérable d'enfants qu'il avait à surveiller que veiller à la protection de la collectivité; il lui était impossible de surveiller individuellement la croissance de chaque enfant.

C'est pour remédier à cet état de choses que le Dr. Guibert, alors conseiller municipal, fit voter en 1910 le règlement que je vais exposer et qui est actuellement en vigueur.

Le nombre des médecins inspecteurs fut porté de 126 à 210. Chaque médecin a au maximum 1000 élèves à surveiller.

Les médecins sont recrutés par le concours. Les candidats pour prendre part au concours doivent avoir un minimum d'âge de 32 ans et 5 ans de pratique professionnelle.

Le jury du concours est formé par un hygiéniste notable désigné par le Préfet qui en est le président, par un médecin des hôpitaux d'enfants et par quatre médecins inspecteurs ayant au moins six années d'exercice en cette qualité.

Les épreuves sont de deux sortes: une d'admissibilité et des épreuves définitives.

L'épreuve d'admissibilité consiste dans une composition écrite qui comprend deux sujets:

1°. un sujet de médecine infantile.

2°. un sujet d'hygiène scolaire ou de pédagogie physiologique. Deux heures sont accordées pour cette composition à laquelle un maximum de 30 points est attribué.

Les épreuves définitives comprennent:

1°. Examen d'une école, examen d'une classe, examen collectif ou individuel des enfants (fiche scolaire) et rapport sur cet examen.

Nombre de points, 30.

2°. Exposé de 15 minutes sur un sujet d'hygiène—à l'usage des écoliers ou des maîtres après un quart d'heure de préparation.

Nombre de points, 20.

Le programme du concours comprend: l'anatomie et la physiologie des organes pendant la croissance, la puberté, les mesures de préservation de la collectivité (maladies contagieuses scolaires et leur prophylaxie, l'hygiène générale de l'école, des bâtiments, cour, préau, water-closet, bain-douche, les procédés de nettoyage et de désinfection, la cantine, &c.) l'éducation physique, les notions de pédagogie physiologique, &c.

La surveillance individuelle de l'écolier: l'examen anthropométrique, l'examen physiologique et pathologique des organes et l'examen médico-psychique.

Chaque médecin touche par an 1200 francs d'honoraires.

En 1912 on nomma en outre un médecin inspecteur en chef aux appointements annuels de 8000 fr.

Chaque médecin inspecteur doit visiter les écoles dont il a la charge au moins une fois par semaine au jour et heure qu'il a fixés d'un commun accord avec le directeur. Il doit faire des visites supplémentaires chaque fois qu'il en est requis ou lors qu'il le juge nécessaire.

Toutes les opérations de l'inspection médicale s'accomplissent à l'école. A son arrivée dans chaque école le médecin commence par procéder à un examen des locaux: vestibule, préau, cour, cabinets d'aisance, urinoirs, lavabos, escaliers, couloirs, classes, &c. Il est accompagné dans cette visite par le directeur qui lui donne tous renseignements utiles et auquel il présente les observations qu'il juge nécessaire. Il visite ensuite la cantine, s'assure de la qualité des aliments et de leur mode de préparation.

Le médecin-inspecteur procède à l'examen des enfants, notamment de ceux qui lui sont signalés par les maîtres. Il désigne ceux qu'il désire examiner plus particulièrement et qui sont conduits dans un cabinet spécial.

Il reçoit aussi les enfants qui ont été absents de l'école pendant plus de quatre jours sans cause connue. Ces enfants ne peuvent être admis à nouveau qu'avec le consentement du médecin.

Les résultats des examens et des observations du médecin sont consignés sur un registre.

La durée des évictions pour maladie contagieuse est réglementée par un arrêté ministériel.

Le médecin procède à l'examen individuel des enfants au moment de leur admission à l'école primaire.

Cet examen a pour but de rechercher, pour en combattre ou en atténuer les effets, les causes personnelles qui peuvent nuire au développement physique et intellectuel de l'enfant.

Il doit être effectué dans les trois mois de la rentrée des classes et renouvelé en ce qui concerne les suspects avant la fin de l'année scolaire.

L'examen porte sur les organes mentionnés sur la fiche dont nous donnons le modèle ci-joint.

Nom.....PRÉNOMS.....

né à.....le.....191....

demeurant.....

.....

.....

VILLE DE PARIS

.....^e arrondissement

.....^e circonscription

FICHE SANITAIRE

Ecole Communale de garçons

Rue.....No.....

M. le^r Dr.....Médecin-Inspecteur

NOTA.—Cette fiche ne doit, sous aucun prétexte, être confiée à une personne autre que le Médecin-Inspecteur de l'Ecole.

Elle sera remise, sous pli fermé, à la famille, lorsque l'enfant ne fréquentera plus l'école.

Examen d'entrée à l'Ecole, le.....

Maladies antérieures à l'entrée à l'Ecole: Rougeole....., scarlatine.....,
 - varicelle....., coqueluche....., diphtérie....., oreillons.....,
 fièvre typhoïde....., bronchite....., affections diverses.....

Etat général.....

Peau.....

Cuir chevelu.....

Bouche et Dentition.....

Système lymphatique et ganglions.....

Rhino-Pharynx.....Amygdales.....

Végétations adénoïdes.....

Squelette et articulations.....

Colonne vertébrale.....

Poumons { Droit.....
 Gauche.....

Cœur.....

Système nerveux.....

Etat intellectuel.....

Acuité auditive

Oreilles.....O. D.....O. G.....

Acuité visuelle

Yeux.....O. D.....O. G.....

Observations {
 et Mesures {
 à prendre {

EXAMENS ULTÉRIEURS

Développement intellectuel:.....

.....

.....

.....

YEUX	DATE —	2e EXAMEN Acuité visuelle		DATE —	3e EXAMEN Acuité visuelle	
		O. D.	O. G.		O. D.	O. G.
	
.....	
.....	

ANNÉES	DATES	RESULTATS DE L'EXAMEN	MALADIES	OBSERVATIONS
8e				
9e				
10e				
11e				
12e				
13e				
14e				

VACCINATION

Vacciné le

Renouaciné (1) le {

..... *avec succès* (vaccine franche, atténuée ou modifiée) *ou sans succès.*
 *avec succès* (vaccine franche, atténuée ou modifiée) *ou sans succès.*
 *avec succès* (vaccine franche, atténuée ou modifiée) *ou sans succès.*

(1) *Article 9 du Décret du 27 juillet 1903*: Dans le cas d'insuccès, la vaccination doit être renouvelée une deuxième et, au besoin, une troisième fois, le plus tôt possible, et, au plus tard, à la prochaine séance de vaccination.

RÉPUBLIQUE FRANÇAISE

LIBERTÉ, ÉGALITÉ, FRATERNITÉ

PREFECTURE DE LA SEINE

VILLE DE PARIS

CERTIFICAT DE REVACCINATION

Le Médecin-Inspecteur des Ecoles, soussigné, certifie que l'élève

né le

à

(département de

), demeurant à

Paris

a satisfait aux prescriptions de la loi du 15 février 1902 (art. 6).

Paris, le 191

LE MEDECIN-INSPECTEUR DES ÉCOLES,

NOTA.—Le présent certificat ne sera délivré qu'en cas de succès ou après trois revaccinations.

TAILLE										POIDS									
centim.	7 ^e année	8 ^e année	9 ^e année	10 ^e année	11 ^e année	12 ^e année	13 ^e année	14 ^e année		kilog.	7 ^e année	8 ^e année	9 ^e année	10 ^e année	11 ^e année	12 ^e année	13 ^e année	14 ^e année	
155										45									
										44									
										43									
										42									
150										41									
										40									
145										39									
										38									
140										37									
										36									
135										35									
										34									
130										33									
										32									
125										31									
										30									
120										29									
										28									
115										27									
										26									
110										25									
										24									
105										23									
										22									
100										21									
										20									
95										19									
										18									
										17									
										16									
										15									

AMPLITUDE THORACIQUE

Années	Inspiration maxima	Expiration maxima	Différence	Années	Inspiration maxima	Expiration maxima	Différence
7 ^e				11 ^e			
8 ^e				12 ^e			
9 ^e				13 ^e			
10 ^e				14 ^e			

La fiche individuelle est conservée sous clef à l'école avec toutes les obligations du secret professionnel, à la disposition exclusive du médecin qui ne peut s'en dessaisir ni en donner communication, si ce n'est aux parents.

Lorsqu'un élève vient à quitter une école pour rentrer dans une autre la fiche est transmise sous enveloppe cachetée au médecin inspecteur. Les données fournies par l'examen individuel ainsi que les observations recueillies au cours des visites hebdomadaires permettent aux médecins;

1°. d'appeler l'attention des maîtres sur les attitudes prises par les élèves et de leur donner des renseignements sur les places à attribuer aux enfants dont les facultés sensorielles sont amoindries.

2°. d'indiquer aux maîtres les enfants dont la constitution générale est faible ou défectueuse.

3°. de donner son avis sur les enfants qui lui sont signalés par le directeur comme arriérés.

4°. de dresser la liste des enfants qui lui semblent devoir être proposés pour les colonies de vacances ou les écoles de plein air.

5°. d'avertir les familles afin qu'elles fassent soigner leur enfant.

Le médecin scolaire est en outre chargé des revaccinations pour les élèves soumis aux prescriptions de la loi.

Le médecin adresse chaque mois un rapport à la direction de l'enseignement sur la situation hygiénique et sanitaire de l'école, il signale les causes d'insalubrité ou d'inconfort.

Le rapport de janvier indique en outre les résultats de l'examen individuel des élèves et de la revaccination, celui de mars les modifications dont lui paraissent susceptibles les locaux et le mobilier. Celui de juillet contient un résumé des faits importants observés au cours de l'année. En outre un rapport est fourni chaque fois qu'un fait important intéressant l'hygiène de l'école ou celle de l'élève se produit.

Le règlement insiste pour que la fermeture de classes ou d'écoles ne soit ordonnée que dans des cas tout à fait exceptionnels.

Les écoles privées sont inspectées au point de vue de l'hygiène des locaux et de la prophylaxie des maladies contagieuses, mais le médecin ne procède pas à l'examen individuel des élèves.

L'organisation de l'inspection médicale des écoles a été complétée par la création d'une commission d'hygiène scolaire réclamée depuis longtemps par la Société des Médecins inspecteurs de Paris.

Cette commission est composée du directeur de l'enseignement qui en est le président, du sous-directeur, d'un inspecteur primaire, de deux

conseillers municipaux, du chef de service de désinfection et de médecins des écoles. Elle a un rôle consultatif pour tout ce qui concerne l'hygiène des écoles. Elle se réunit sur convocation du directeur de l'enseignement.

En résumé on voit par cet exposé que la nouvelle organisation a étendu le rôle et les attributions du médecin scolaire. Outre l'inspection des locaux et la prophylaxie des maladies contagieuses que le médecin assurait depuis 1879 il doit maintenant pratiquer l'examen individuel de chaque enfant entrant à l'école. C'est là un fait capital et qui peut avoir une importance considérable sur l'avenir de la race.

Le nouveau mode de recrutement du médecin par le concours a donné aux écoles de la ville de Paris des inspecteurs connaissant bien leur rôle et ayant les connaissances suffisantes pour rendre aux écoliers le maximum de services.

REPORT OF THE MEDICAL INSPECTION OF THE WHITE AND NEGRO SCHOOLS OF A VIRGINIA COUNTY

BY

ROY K. FLANNAGAN

Preface. The larger cities of Virginia, notably Richmond, Norfolk and Lynchburg, have a very thoroughly organized service for the medical inspection of schools, and the most satisfactory results are being achieved in better child health in these larger centers of population, but the fact that the great bulk of the people in the country districts were not alive to the need for the inspection of their children, threw the responsibility upon the State Board of Health to demonstrate that need if need there was. The Virginia Board of Health, therefore, in coöperation with the State Department of Public Instruction and the School of Education of the University of Virginia, planned a comprehensive survey of the whole school situation in one of the rural school districts. A representative county was selected and a complete inspection made of the children in the forty-nine schools within its borders.

The methods by which this was accomplished have already been reported in a paper read before the Southern Sociological Congress in Atlanta last April. The detailed results of the survey are herewith submitted.

Explanatory. However far from the ideal the school situation in Virginia may appear to those whose first knowledge of it is gained by this report, it is due our people to say that notwithstanding appearances the tremendous handicaps to public instruction in the South are being splendidly overcome by Virginia. A very far-reaching and liberal school policy has been adopted and a free hand given by our law makers in its development. Changes for the better are rapidly becoming apparent in every corner of the State. As gloomy as *this* report appears the fact should not be overlooked that it shows that nearly three-quarters (70%) of the white school children of the county examined are now housed in buildings of a good type, properly equipped. It is hoped that the publication of this report will hasten the day when the remoter districts of all of our counties will be furnished with equally sanitary and serviceable buildings as those which the more populous portions now have.

Scene of Inspection. The county of Orange, chosen as the scene of this survey, is typical of Virginia. It lies partly in the foothills of the Blue Ridge and partly in the rolling country sloping toward the Rappahannock River and is not far from the geographical center of the state. It has practically no foreign-born among a population about equally divided between whites and negroes. Neither the extremes of poverty nor of wealth are present and the people are almost wholly given to rural pursuits. Conditions, then, as to schools and school children should be neither better nor worse in this county than elsewhere in the Commonwealth.

Time and Scope of Inspection. The work of inspecting all of the schools of a county covering a territory thirty-eight miles long and about twelve miles wide, only partly provided with decent roads, is not a matter to be lightly regarded, especially as the winter months are practically the only school months in rural Virginia. A division of the work was therefore effected, the State Board of Health undertaking the more difficult task of visiting the widely scattered one-room schools, forty-two in number, and volunteers from the University of Virginia, under the direction of Dr. W. H. Heck of the School of Education, visiting the more accessible consolidated graded schools of which there were seven.

The volunteer corps of inspectors, consisting as it did of busy professors, physicians and dentists who could not give continuous service, failed at certain points to get data covered by the State Board of Health's inquiry and so as regards the larger schools the record is somewhat faulty; however, the comparative study of figures obtained brings out some very interesting facts.

School Population, Enrollment and Attendance. The school population of Orange county is recorded as 4,008 and upon this basis State school funds are apportioned to it, but the figures furnished the inspectors by the teachers indicate that only 2,609 children answer the roll call when all are present. On the face of the returns it would seem, therefore, that 1,399 children in this county do not avail themselves of their school privileges. Of those enrolled only 70% of the white children and 60% of the colored were present on the day of examination. That this discrepancy is not due to poor facilities furnished the colored people, can be easily verified by a glance at the photographs accompanying the chart. If the one-room white school had any advantage over the negro school in respect to building and equipment it was not apparent to the inspectors.

Eyes, Ears and Throats. The percentage of eye defects is much

lower in the village schools with their better arranged windows than in the purely rural rectangular box schools with their cross lights, being $14\frac{1}{2}\%$ in them against 27% in white and 23% in colored one-room schools. In the white graded schools, however, the serious eye defects are more predominant, being 7% of the total examined, while the serious eye defects in rural white and colored were only 4% in each.

- *Hearing Defects* are more frequent in the village schools, $12\frac{1}{2}\%$ there, while the rural schools show only $4\frac{1}{2}\%$ for both races.

Enlarged Tonsils according to our figures are more frequent among the colored than among the whites, being found in nearly 40% , while 30 and 31% respectively is the record for the rural and village school.

Adenoids are much less apparent in the graded white schools than in the purely rural, being only 26% present against 40% in the one-room white and $37\frac{1}{2}\%$ in the colored schools.

Teeth and Glands. Examination of the teeth revealed a really serious state of affairs, for those children to whom it would seem that dentists were most accessible, namely those living in proximity to the villages, showed 86% with defective teeth, 63% of this number having permanent teeth decaying. The rural white schools showed 47% defective with a little over half of these having permanents involved. The colored child was in better case, recording only 28% defective; 58% , however, of these had permanent teeth showing cavities. Examination of the purely rural white and colored children with respect to the glands of the neck brought out the fact that the colored child is more than twice as frequently affected with glandular enlargement as the white, the percentage being 25 as against 12 .

Nutrition and Anaemia. It was particularly startling to note the large percentage of poorly nourished children in this part of the country which for climatic and other advantages naturally should be as healthful as any locality on the globe, 25% of the whites and $37\frac{1}{2}\%$ of the blacks were below par in this respect.

As regards the color in the cheeks of the children there was 30% of plainly visible anaemia in white and 5% in the colored. It is worthy of note that there were twice as many anaemic boys as girls.

Vaccination and Previous Sickness. The children of this county were 69% vaccinated. Considering the fact that there has been no outbreak of smallpox in Orange County for years, the large number of vaccinated children is very gratifying.

The children being questioned as to what sickness they had formerly suffered from, it developed that 14% of the whites had never been

sick at all and 28% of the negroes. Good health for white children, according to this record, was little less contagious than *mumps* which claimed 16%. *Whooping Cough* took the biggest toll with 57%, while *measles* had spread itself over 42% of them, 2% only had had diphtheria and 1½% typhoid fever. A rather interesting discrepancy among whites and negroes was noted as to pneumonia, 30% of the white children had suffered from this disease and only 5% of the colored and yet active lung disease was found present in only 2% of whites, though 5% of colored children were thus affected. Heart disease was a negligible quantity, $\frac{8}{10}$ % only in white and $\frac{1}{10}$ % in colored.

Intestinal Parasites. The examination for intestinal parasites, which was conducted as a part of this investigation, throws a broad and altogether significant light upon the rather alarming percentage of poorly nourished and anaemic children observed.

Only fifteen white rural schools furnished specimens for examination and by no means a full quota of the scholars, and yet 25½% of those examined were found to be infected with hookworm, of those from ten colored schools examined the percentage was found to be nineteen. The village schools as was to be expected showed a lower per cent—fourteen and a half.

A division of these positive cases (white and negro) according to years shows that approximately

23½% occur in those under eight years.

33½% occur in those between nine and eleven years.

42% occur in those over twelve years of age.

Comparison of the heights and weights of anaemic children (probably hookworm, though many not examined therefor) with heights and weights of normal children, gave the following interesting result:

The average height of normal boys, 4 ft. 5 in.; normal girls, 4 ft. 6 in.

Average height of anaemic boys, 4 ft. 6 in.; anaemic girls, 4 ft. 7 in.

Average weight of normal boys, 88.6 lbs.; normal girls, 90.6 lbs.

Average weight of anaemic boys, 66.4 lbs.; anaemic girls, 62.3 lbs.

A difference as to weight of 22 lbs. in boys and 28 lbs. in girls.

The significance of these figures, if any, I will leave for others to work out. There are likewise some interesting figures on the chart with reference to the poor nutrition and anaemia in hookworm and round worm cases which my time will not permit me to analyze.

The Rural School Building Itself. I now come to the school buildings and the general surroundings amid which the foregoing children are being taught. I will leave out of consideration the consolidated village schools which in general represent modern ideas of construction

and equipment, as these without exception represent the abolition of from three to six of the little affairs about to be described.

It will be seen that all of these rural schools are either of the one room "old field" variety or old abandoned tenant houses, churches or store rooms and with the exception of two of the whole forty-two entirely innocent of paint.

Location. For the most part these schools were located in the midst of woods, remote from dwellings of any kind. At only one was there any attempt to cultivate the aesthetic by rendering the grounds or interior attractive. Only four of them had shades to the windows. These were colored schools. This seemed, however, a rather problematical advantage since the average light space per school was only 48 square feet, or about .06% of the average floor space.

Cubic Air Space. The cubic air space was less than 4,000 cubic feet per school or 160 cubic feet per pupil for forty schools. Two schools were in old churches which were sufficiently airy on the January day which found the investigators there.

Desks. A few white schools had very good, fairly modern varnished desks, but on the whole the traditional ante-bellum, knife-whittled, unpainted, board desks did duty as of yore. Several schools had no semblance of desk and scarcely enough seats to serve.

Water Supply and Waste Disposal. The water supply of these schools furnished a very serious ground for criticism since in no case was the well or spring used properly guarded against surface contamination, and eighteen of these sources of supply were more than 200 yards away from the building. It was gratifying to note that thirty of the schools were using individual cups for drinking purposes.

The facilities for the disposal of excreta at the schools were comparatively good on the whole; but nine schools failed to provide but one closet and six were absolutely devoid of any.

Conclusion. It would be impossible within the time allotted to make many generalizations from the mass of material charted nor do I think it necessary. Those who are interested would much rather draw their own conclusions. Before I relieve your patience, though, I must unload one opinion I have long held but which this investigation has crystallized into a profound conviction. Until a systematic thoroughgoing rural health organization is an accomplished fact in Virginia and throughout the South the money which is being expended for schools and teachers in these sections will continue as now to be 25% wasted. A bloodless brain cannot properly respond to intellectual stimuli and the money

spent in attempting to cram knowledge into the heads of children whose blood is impoverished to the extent shown is doing only three-fourths duty. Bad as the old school houses are, poor as is their equipment, I unhesitatingly affirm that the great need in the rural districts of Virginia is not more schools nor better, nor even better teachers, great as these needs are, but better school children. Children with rosy cheeks and bright eyes instead of a large proportion of pale faces and vacant stares; children with rounded plump arms and legs instead of thin and bloodless ones, children whose brains are fed by a rich red flow of healthy blood instead of a watery stream poisoned by a leech-like, filth-born parasite.

All honor to Mr. Rockefeller for the liberality which has brought a great awakening to the South and shown us our danger and our need. But in my judgment the problem of a better child will not be solved nor better health organization created in the country districts until the educational forces wake up to the necessity of actively and earnestly entering the health campaign. Indeed the problem is one of the conservation of the raw material which furnishes the grist to the educational mill. Good school buildings, yes. Good text books, yes. Modern curricula and methods, yes. Properly equipped teachers, yes; but first and foremost a live, lively, happy and responsive animal ready with abounding health and mental alertness to absorb like a sponge the everlasting truth in whatsoever guise presented.

STATISTICAL TABLE OF MEDICAL INSPECTION AND SURVEY OF SCHOOLS OF ORANGE COUNTY, VIRGINIA

BY

State Board of Health, Dr. E. G. WILLIAMS, *Commissioner*

—o—

Dr. ROY K. FLANNAGAN, *Director of Inspections*

Assisted by

W. A. BRUMFIELD, M.D. and H. A. LICKLE, M.D.

(*Of the Rockefeller Hookworm Commission*)

In Coöperation with Department of Education of University of Virginia
and Department of Public Instruction of Virginia,

R. C. STEARNES, *Superintendent*

Prof. W. H. HECK, University of Virginia, C. P. COWARD, *District Superintendent of Schools*, H. S. HEDGES, M.D., R. L. COMPTON, M.D.,
J. C. FLIPPIN, M.D., MARVIN HARRIS, D.D.S., *Volunteer Inspectors*

	Rural White One-Room Schools	Rural Colored Schools	Consolidated Graded Schools	Total
Number of schools examined.....	22	20	7	49
Number of teachers.....	22	24	31	77
Length of session.....	6 mos.	5 mos.	9 mos.	....
School population of county....	4008	....	....	4008
Enrollment.....	464	1149	996	2609
Present.....	327	669	797	1793
Percentage of attendance.....	.70	.60	.80	.70

Age

Average age—boys.....	11.8	11.3	11.1	11.4
Average age—girls.....	11.4	11.5	12.7	11.8
Average age.....	11.6	11.4	11.9	11.6

Height

Average height—boys.....	4 ft. 7 in.	4 ft. 5 in.	4 ft. 6 in.	4 ft. 6 in.
Average height—girls.....	4 ft. 5 in.	4 ft. 6 in.	4 ft. 6½ in.	4 ft. 6 in.
Average height.....	4 ft. 6 in.	4 ft. 5½ in.	4 ft. 6½ in.	4 ft. 6 in.

Weight

Average weight—boys.....	73 lbs.	84.8 lbs.	92 lbs.	83.3 lbs.
Average weight—girls.....	87.1 lbs.	81 lbs.	87.1 lbs.	85.5 lbs.
Average weight.....	80.5 lbs.	82.9 lbs.	89.5 lbs.	84.4 lbs.

Eyes

Number pupils examined.....	315	651	659	1625
Pupils' eyes normal.....	230	504	564	1298
Pupils' eyes defective.....	85	147	95	327
Pupils' eyes less than 20-40....	74	121	64	259
Pupils' eyes seriously defective..	11	26	49	86
Percentage eyes normal.....	.73	.77	.83	.77.7
Percentage eyes defective.....	.27	.23	.145	.215
Percentage seriously defective ..	.04	.04	.075	.051

Ears

Number pupils examined.....	315	681	659	1655
Pupils' hearing normal.....	301	644	577	1522
Pupils' hearing defective.....	14	37	82	133
Percentage hearing normal.....	.955	.955	.875	.928
Percentage hearing defective ...	.045	.045	.125	.075

Throat

Pupils examined.....	315	671	505	1501
Tonsils normal.....	218	413	355	1086
Tonsils enlarged.....	97	258	160	515
Percentage enlarged.....	.305	.385	.31	.333
Adenoids normal.....	189	419	380	988
Adenoids enlarged.....	126	252	137	515
Percentage enlarged.....	.40	.375	.265	.347

<i>Nose</i>	Rural White One-Room Schools	Rural Colored Schools	Consolidated Graded Schools	Total
Pupils examined.....	315	671	517	1503
Pupils' nose normal.....	172	498	303	973
Deviated septum.....	143	173	114	430
Percentage with deviation.....	.45	.26	.22	.31
<i>Teeth</i>				
Pupils examined.....	319	672	554	1545
Number with perfect teeth....	167	483	76	728
Number with defective teeth...	150	187	478	817
Number with permanents defective.....	79	109	303	491
Number with temporaries defective.....	71	80	175	326
Percentage with defective.....	.47	.28	.86	.537
Percentage with permanents defective.....	.53	.58	.63	.58
Percentage with temporaries defective.....	.47	.42	.37	.42
<i>Glands</i>				
Number with enlarged cervical..	25	56	...	81
Number with enlarged tonsillar..	13	115	...	128
Total with enlarged glands.....	38	171	...	209
Percentage with enlarged glands	.12	.25	...	.185
<i>Nutrition</i>				
Number examined.....	316	663	...	779
Number well nourished.....	237	422	...	657
Number poorly nourished.....	79	251	...	330
Percentage with poor nutrition..	.25	.375	...	.312
<i>Anaemia</i>				
Number pupils anaemic.....	94	34	...	128
Anaemic boys.....	63	...	...	...
Anaemic girls.....	31	...	...	...
Percentage anaemic.....	.30	.05	...	.175
Percentage boys anaemic.....	.67	...	...	...
Percentage girls anaemic.....	.33	...	...	...
<i>Eruption</i>				
Number with acne.....	6	1	10	17
Number with scabies.....	...	16	...	16
Number with other eruptions...	...	...	10	10
Percentage with eruption.....	.002	.03	.04	.0114
<i>Vaccination</i>				
Number examined.....	326	675	...	1001
Number vaccinated.....	207	503	...	710
Percentage vaccinated.....	.63	.745	...	.687

<i>Previous Sickness</i>	Rural White One-Room Schools	Rural Colored Schools	Consolidated Graded Schools	Total
Pupils questioned.....	326	675	...	1001
Number reporting none.....	46-14%	191-28%	...	237-21%
Whooping cough.....	198	362	...	560
Percentage.....	.61	.535	...	.572
Measles.....	143	266	...	409
Percentage.....	.44	.395	...	.417
Chicken pox.....	108	153	...	261
Percentage.....	.33	.23	...	.28
Mumps.....	59	98	...	157
Percentage.....	.18	.145	...	.162
Pneumonia.....	30	5	...	35
Percentage.....	.09	.007	...	.048
Diphtheria.....	12	14	...	26
Percentage.....	.04	.02	...	.03
Typhoid fever.....	6	12	...	18
Percentage.....	.02	.017	...	.018
Scarlet fever.....	6	...	...	6
Percentage.....	.02	...	...	.01

Organic Disease

Lungs.....	6	32	...	38
Percentage.....	.02	.055	...	.037
Heart disease.....	2	1	...	3
Percentage.....	.006	.001	...	.0035

*Hookworm and Data in Relation**Thereto*

Aver. number pupils per school..	15	16	...	...
Number schools examined.....	15	10	4	29
Number pupils examined.....	262	447	270	979
Number boys tested.....	142	217	128	487
Number girls tested.....	120	230	142	492
Number boys infected.....	35	51	14	100
Number girls infected.....	32	33	25	90
Total infected.....	67	84	39	190
Percentage boys infected.....	.246	.235	.11	.197
Percentage girls infected.....	.266	.143	.18	.196
Percentage pupils infected.....	.256	.19	.145	.1965
Boys up to 8 years infected.....	8	13	4	25
Girls up to 8 years infected.....	7	6	5	18
Total.....	15	19	9	43
Percentage.....	.225	.226	.23	.227
Boys from 9 to 11 infected.....	15	11	4	30
Girls from 9 to 11 infected.....	8	10	13	31
Total.....	23	21	17	61
Percentage.....	.343	.25	.435	.321
Boys 12 and over infected.....	12	27	6	45

<i>Hookworm and Data in Relation Thereof</i>	Rural White One-Room Schools	Rural Colored Schools	Consolidated Graded Schools	Total
Girls 12 and over infected.....	17	14	7	38
Total.....	29	41	13	83
Percentage.....	.43	.488	.335	.435
Total pupils marked anaemia...	94	34	...	128
Average age anaemic—boys....	10.9	9.5	...	10.2
Average age anaemic—girls....	10.7	9.8	...	10.25
Average age anaemic.....	10.8	9.65	...	10.2
Average age normal—boys.....	12	11.4	...	11.7
Average age normal—girls.....	11.1	11.6	...	11.35
Average age normal.....	11.5	11.5	...	11.5
Average height anaemic—boys..	4 ft. 6 in.	4 ft. 4½ in.	...	4 ft. 5¼ in.
Average height anaemic—girls..	4 ft. 7 in.	4 ft. 5 in.	...	4 ft. 5½ in.
Average height anaemic.....	4 ft. 6½ in.	4 ft. 5 in.	...	4 ft. 6 in.
Average height normal—boys...	4 ft. 5 in.	4 ft. 4½ in.	...	4 ft. 4¾ in.
Average height normal—girls...	4 ft. 6 in.	4 ft. 5½ in.	...	4 ft. 6 in.
Average height normal.....	4 ft. 5½ in.	4 ft. 5 in.	...	4 ft. 5¼ in.
Average weight anaemic—boys .	66.4 lbs.	67.7 lbs.	...	67 lbs.
Average weight anaemic—girls..	62.3 lbs.	68.5 lbs.	...	65.4 lbs.
Average weight anaemic.....	65 lbs.	68 lbs.	...	66.5 lbs.
Average weight normal—boys...	88.5 lbs.	86 lbs.	...	87¼ lbs.
Average weight normal—girls...	90.6 lbs.	86.1 lbs.	...	88½ lbs.
Average weight normal.....	89½ lbs.	86 lbs.	...	87¾ lbs.

Nutrition and Hookworm

Anaemic cases nutrition good...	16	...	...	...
Anaemic cases nutrition poor...	21	...	...	...
Per cent. anaemic nutrition good	.43	...	...	...
Good color nutrition good.....	23	...	...	...
Good color cases nutrition poor.	7	...	...	...
Percentage good nutrition and color.....	.76	...	...	...

Round Worm

Total number tested.....	262	...	...	...
Anaemic cases nutrition good...	21	...	...	...
Anaemic cases nutrition poor...	20	...	...	...
Good color cases nutrition good..	30	...	...	...
Good color cases nutrition poor..	8	...	...	...
Percentage anaemic cases nutri- tion good.....	.51	...	...	...
Percentage good nutrition color.	.80	...	...	...

School Buildings and Grounds

Number buildings.....	22	20	7	49
Number pupils (average per school).....	15	16	...	...
Unpainted.....	20	20	1	41

<i>School Buildings and Grounds</i>	Rural White One-Room Schools	Rural Colored Schools	Consolidated Graded Schools	Total
Grounds more than 1 acre.....	15	12	6	33
Grounds 1 acre or less.....	7	8	1	16
Attempts towards beautifying....	1	...	1	2
Cubic air space in 20 schools....	4114 cu. ft.	3772 cu. ft.	...	3943 cu. ft.
Average cubic air space per pupil	274¼ cu. ft.	275¾ cu. ft.	...	...
Square feet of light per school ..	52	45	...	...
Window shades.....	...	4	...	4
Schools with adequate number desks.....	17	12	6	35
Schools with inadequate number desks.....	5	8	1	14
Schools with modern desks.....	10	...	7	17
Schools with crude desks.....	12	20	...	32
Painted or unwashed walls.....	4	...	5	9
Dingy undecorated walls.....	18	20	2	40
Water supply within 200 yards..	17	7	7	31
Water supply beyond 200 yards..	5	13	...	18
Water supply safe.....	...	...	7	7
Water supply doubtful.....	9	6	...	15
Water supply dangerous.....	13	14	...	27
Water delivery.....	...	...	...	...
Cooler or sanitary fountain.....	8	3	7	18
Open bucket.....	14	17	...	31
Individual cups.....	18	12	7	37
Common cup.....	4	8	...	12

Sewage Disposal

Schools with 2 sanitary privies .	4	11	6	21
Schools with 1 sanitary privy...	4	...	...	4
Schools with 2 insanitary privies	4	6	1	11
Schools with 1 insanitary privy..	5	2	...	7
Schools with no privy.....	5	1	...	6

MEDICAL SCHOOL INSPECTION IN ROCHESTER

BY

GEORGE W. GOLER

Whatever medical school inspection may become in future, here in its present state it is designed to discover and to record those gross physical and mental defects which are either developmental in their origin or are the sequelae of past infantile illnesses, and to point out the means by which these defects are to be avoided, and, so far as possible, removed. Medical school inspection is not yet to be dignified by the term "examination." There are at present neither funds available for the purpose of a real medical examination nor a sufficient number of men available for the work of determining slight developmental and other defects. The work, therefore, is an inspection and not an examination; though it is hoped that real medical school examinations may soon be made and the results recorded.

Medical school inspection, as at present practiced with us, aims to discover and serially record the gross mental and physical condition of the children in public schools. We, in Rochester, have twelve medical school inspectors, eleven men and one woman, working under the direction of the Health Bureau, for the physical inspection of 19,381 school children in 36 public schools—an average of 1,615 pupils to each medical inspector. Each medical school inspector is assigned to a district in which he has not only medical school inspection work, including the vaccination of all unvaccinated children, but also the care of the sick poor, and the insane examinations in his district; and depending upon the amount of this additional work in the district, the size of the school and the number of pupils therein, he is assigned to from two to four schools. In 1912 the work for each medical school inspector averaged as follows:

Vaccinations.....	450
Visits to sick poor.....	200
Office calls to sick poor.....	100
Maternity cases.....	2
Insane examinations.....	40

Aside from the work in his district already indicated, he is called upon to make a weekly sanitary survey of the school, including warming, lighting, ventilating and cleanliness, and to make a gross physical inspection of each child during every school year, and to record his findings on a card so arranged as to follow the child from grade to grade and to present a written statement on one card of the physical condition of that child during its whole school life. The card form contains in order the following questions, to which answers are to be made usually by "yes" or "no."

ROCHESTER BUREAU OF HEALTH. DIVISION OF MEDICAL INSPECTION OF PUBLIC SCHOOLS

Physical record of.....		Sex.....		Born in.....		On.....		No. of Birth.....	
Nationality of Father.....		Mother.....		No. in Family: Adults.....		Children.....		No. of Birth.....	
Measles.....	Scarlet.....	Diph.....	Peritis.....	Mumps.....	Small Pox.....	C. Pox.....	Pneumonia.....	Grippe.....	Typhoid.....
Meloria.....	Meningitis.....	Infant Gastro-intest. Dis.....	Rheumatism.....	Tuberc.....	Date of 1st Exam.....	In School No.....			
1. Age and year.....	2. Grade.....	3. Class.....	4. Revaccinations.....	5. Diseases during year.....	6. Date of Examinations.....	7. Height.....	8. Weight.....	9. Nutrition.....	10. Anemia.....
11. Enlarged Glands.....	12. Nervous Diseases.....	13. Cardiac Diseases.....	14. Pulmonary Diseases.....	15. Skin Diseases.....	16. Defect Orthopedic.....	17. " of Vision.....	18. " of Hearing.....	19. " Nasal Breathing.....	20. " Palate.....
21. " Teeth.....	22. Hernia.....	23. Hypertrophied Tonsils.....	24. Adenoids.....	25. Mentality.....	26. Conduct.....	27. Effort.....	28. Proficiency.....	29. Treatment necessary.....	

State Diagnosis of Defective Condition found.

State Treatment needed.

Date.

Wherever gross defects are found they are to be further stated on the reverse side of the card, as for instance: Eye—O. D. 10-20: Teeth—two carious molars: Tonsils—greatly enlarged: Glands—large cervical: Right spinal lateral curvature, etc.

During the early years of medical school inspection, these defects were simply registered, and small effort was made to have the defects corrected. But, as public opinion began to view the medical work in the schools in a more kindly way, these gross defects were required to be corrected. The methods employed are as follows:

The child with any gross physical defects is referred to the family physician; or where poverty or ignorance, or both, appear to strongly preclude the possibility of attention to these defects, through reference to the family or to the physician, the child is referred to a dispensary, where the defects are to be corrected and the child is thereafter refused admittance to school until it is able to show to the medical school inspector that its gross physical defects have been corrected.

TABLE OF DEFECTS

ABNORMALITIES FOUND		EXCLUSIONS	
Malnutrition.....	833	Measles.....	2
Anaemia.....	1,201	Scarlatina.....	8
Enlarged glands.....	3,146	Pertussis.....	2
Nervous diseases.....	56	Mumps.....	8
Cardiac diseases.....	93	Varicella.....	3
Pulmonary diseases.....	14	Pharyngitis and tonsilitis.....	123
Skin.....	273	Diphtheria.....	...
Defect, orthopedic.....	176	Tuberculosis.....	3
Defect of vision.....	1,524	Ringworm.....	21
Defect of hearing.....	534	Pediculosis.....	192
Defect of nasal breathing.....	124	Scabies.....	39
Defect of palate.....	84	Other skin diseases.....	49
Defect of teeth.....	7,942	Defects of vision.....	6
Hernia.....	5	Diseases of the eye.....	32
Hypertrophied tonsils.....	5,496	Miscellaneous.....	156
Adenoids.....	2,815		
Re-examinations.....	549		644
Re-examinations, nothing found...	599		
Miscellaneous examinations.....	5,720		
	<hr/>		
	32,184		

In attempting to get the gross physical defects of children corrected, the school nurse is a most important factor. We have but four school nurses for 36 public schools. Each nurse is assigned to one school, because one school is all that a nurse can properly care for, if her time is to be spent in work and not in travel. In the order in which the schools

need a nurse, one is assigned to a school as fast as provision is made for a nurse's appointment. Our nurses do not carry on a dispensary in the schools. As far as possible the work of our nurses is done in the home where they attempt to teach the mother what to do with what she has. Whenever a note from the physician to the parent does not meet with a ready response, the nurse visits the home, explains to the parent the need for treatment, and if the exigencies of the case require it and the parent's permission is obtained, she takes the child to the physician, the dispensary or the hospital and sees that the directions of the physician are carried out.

The main defects requiring care are eye, ear, nose, throat and teeth. For the correction of these defects we avail ourselves of the services of dispensaries in general hospitals, one special dispensary for children carried on by the Rochester Public Health Association, and three dental dispensaries in three different public schools, financed and conducted by the Rochester Dental Society. In one of these schools is a nose and throat dispensary. All these dispensaries are use to the utmost limits of their present capacity. For backward, deficient and defective children classes are carried on in the schools and a special medical school examiner from the Health Bureau is assigned to look after these cases.

This is our general plan of work. What are the results and how do we check them up? It has already been shown that we examine all of the public school children annually; that we record their gross physical defects on a card designed to follow them from grade to grade; that provision is made for the correction of gross physical defects; and while we do not succeed in correcting all of those defects which mark departures from the normal, we do get a large percentage of them corrected in the course of the year in which they are discovered. How do we know this? The New York State law provides that all of the children between 14 and 16 years of age going into gainful occupations shall be physically examined and a permit, known as a working paper, shall be issued by the Health Office to every child found physically, mentally and intellectually fit to receive such a paper. Now, every public school child applying for work is required to present at the Health Office, with its other documentary proof, the card of the medical school inspector. This card is checked up, and any defects found are required to be corrected. If the defects found on examination do not appear on the card, the medical school inspector is notified in writing, and the case is discussed with him. As about 1,800 work permits are issued to public school children each year, or about 10% of the children attending public school, we find in this way that in most cases the work is well done, and that very few defects, except those of carious teeth, remain uncorrected.

This is the work of medical school inspection with which should be

linked all the activities of child welfare, so that the child may be watched from birth until it enters school as well as through school until it enters upon the business of life. In connection with this work of medical school inspection in the schools there belong pre-natal and post-natal nursing. Child Welfare Stations should be placed in the schools as they have been with us for some years past. Visiting nurses' work belongs in the schools and should be done from the schools. The very weakest point of medical school inspection to-day—that of permitting the child to be physically and mentally deformed in its formative years, between birth and five, and then at the tender age of five sending it into school, where a medical school inspector and a nurse may cope with its defects and try to correct its deformities—is a practice which ought to be changed very soon. If we are to do this work in the schools and do it well, we must have dispensaries of our own connected with the schools in which to do the work. We should have a dispensary for eye, ear, nose, throat and teeth, as well as for general child work for each group of schools, and the sooner we get them the better.

Medicine in the past has been much concerned with the correction of physical defects. Let us hope that medicine in the future will take as much pains to keep the child well. In the near future we hope that medical school inspection will be so improved and extended that there will come to be medical school examination instead of medical school inspection, and that under the direction of the medical school inspector, with the assistance of the nurse, every child will have its physical and mental status recorded, and that any departure from the normal will be immediately corrected before the child enters school. Let us hope, too, that before such a plan can be put into operation we may, at least, have a physical examination before the child is permitted to enter school.

STAATLICHES UND STÄDTISCHES SCHULARZTWESEN

VON

P. STEPHANI

Bei einem Rückblick auf die Entwicklung des Schularztwesens lässt sich erkennen, dass dasselbe bald durch *Staaten*, bald durch *Städte* besonders gefördert wurde. Deutsche Männer wie Cohn (1867), Ellinger (1877), Baginski (1877) und andere waren es zwar, welche zuerst Schulärzte forderten; doch zur Tat schritten in Europa zuerst Brüssel (1874) und Paris (1877). Heute soll es meine Aufgabe sein, zu untersuchen, in welcher Form und in welchem Umfange das Schularztwesen bisher gefördert wurde und welche Entwicklung ferner als die am meisten wünschenswerteste erscheint.

Dabei soll ausgegangen werden von der Frage: "*Wer muss die Entwicklung des Schularztwesens dringender wünschen, der Staat oder die Gemeinde?*"

Die Antwort kann hier nur lauten: *Der Staat!*

Denn was bezwecken wir mit einer systematischen ärztlichen Beaufsichtigung unserer Schulen? *Wir wollen unsere zarten Volkspflänzlein nicht nur geistig, sondern auch körperlich so entwickeln, dass sie später ihren Platz im Erwerbsleben der Nation voll und ganz auszufüllen vermögen* und zur glücklichen Weiterentwicklung des Landes, das wir unser Vaterland neuisen, mit starker Kraft beitragen können. Dazu brauchen wir nicht nur gesunde Männer, um die Wehrkraft zu heben, sondern dazu brauchen wir auch gesunde Frauen, die fähig sind, uns kräftige Kinder zu schenken und den Willen dazu haben, dies zu tun.

Eine *Gemeinde* weiss kaum, ob das Kind der heimatlichen Scholle treu bleibt und die für Unterricht und Fürsorge aufgewendeten Geldmittel ummünzt zur Förderung der eigenen Stadt. Die Commune kann sogar mit Sicherheit annehmen, dass ein grosser Teil seiner Schuljugend auszieht und die erworbenen Schulkenntnisse anderwärts verwertet. Kräftige Kinder, für deren Gesundheitspflege die Gemeinde verhältnismässig geringe Kosten aufzubringen hat, gehen wohl fort von der Heimatstadt. Die kränklichen Kinder bleiben sesshafter, weil diesen durch ihren schwächlichen Körper die Schwingen für den Flug in die weite Welt meist beschnitten sind. Die grösseren Aufwendungen für Förderung schwacher Gesundheit wird schliesslich gerade der Heimatgemeinde Nutzen bringen, selbst dann, wenn nur eine Ersparnis an Pflegegeldern oder ein Hinausschieben der gänzlichen Erwerbsunfähigkeit erreicht wird.

Dabei soll nicht vergessen werden, dass auch die Gemeinde lebhaft an der Erhaltung und Förderung unserer Volkskraft interessiert ist. Ihr Blühen und Gedeihen fällt und steigt mit dem des Staates.

Der *Staat* kann jedoch mit grosser Sicherheit darauf rechnen, dass weitaus der grösste Teil der Jugend, welche die Nationalsprache spricht, später, sei es im engen Dienste des Reichs selbst, sei es in einer Stadt oder in einer kleinen Gemeinde, ja selbst auch im Auslande, zum Nutzen und zur Förderung der Staatsinteressen arbeiten wird. Für den Staat ist die Wehrfähigkeit der männlichen Jugend einer der obersten Gesichtspunkte, bei der Gesundheitsfürsorge an der Jugend, der jedoch gerade bei der uns vereinigenden internationalen Friedensarbeit lediglich der Vollständigkeit halber gestreift werden sollte.

Der Staat hat diese Aufgaben für die Jugend auch überall erkannt. Die Beschulung der Kinder wird überall durch Staatsgesetzte verlangt und staatlich überwacht.

Der Staat kümmert sich lebhaft für die allgemeine und öffentliche Gesundheitspflege und überlässt deren Pflege und Förderung durchaus nicht der Gemeinde allein. Auch der Gesundheitspflege in der Schule wendet der Staat insofern seine Beachtung zu, als er bestimmt, welche hygienischen Mindestforderungen an die Schulhäuser und an die körperliche Ausbildung zu stellen sind. Wie der Staat aber alle Lasten für die geistige Ausbildung für die grössere Masse unserer Jugend abwälzt, so überlässt er auch die Einzelheiten einer gut durchgeführten Gesundheitspflege der Commune.

Ist *theoretisch* der *Staat* wohl am meisten an der systematischen Durchführung des Schularztwesens interessiert, so liegt *tatsächlich* diese Aufgabe der *Gemeinde* ob. Die praktischen Verhältnisse bedingten es also, dass das Schularztwesen in der Hauptsache durch die Stadtverwaltungen gefördert und ausgebaut wurde. Dies trifft für fast alle Länder zu, nicht nur für mein engeres Vaterland.

Wer das Gewordene überschaut, kann mit der Entwicklung des Schularztwesens unter Leitung der *Communen* sicher zufrieden sein.

Jede Einrichtung lässt sich leichter ins Leben rufen, in einer *einzelnen Stadt* wie in einem *grossen Staate*. Die Entwicklungsmöglichkeit in kleinen Verhältnissen ist eine bessere wie dort, wo auf ganz verschiedenerlei Lebens- und Anschauungsverhältnisse bei der Durchführung genereller Massnahmen Rücksicht genommen werden muss. Der Kreis der Personen, welche Richtung und Umfang der Schularzteinrichtung bestimmen, ist in der Stadt kleiner wie im Staatwesen. Das alles sind zweifellos günstige Momente.

Machen wir allerdings den Versuch, einen *Gesamtüberblick* zu gewinnen, dann entsteht ein kaleidoskopisches Bild, dessen gemeinsamen Charakteristiken und besonders dessen wertvolle Züge für den Un-

kundigen kaum zu erkennen sind. Ein Glück, dass auch hier kraftvolle Persönlichkeiten dann und wann einen auffallenden Strich einzeichnen! Diese Verschiedenartigkeit der *Ausgestaltungsmöglichkeit* unter kommunalem Schirme kam gewiss dem Schularztwesen zu statten. Der Umfang der Arbeit konnte hier so und dort anders gestaltet werden. Man konnte sich richten nach den vorhandenen Geldmitteln, nach den Schulvorständen und nach den Anschauungen der Bevölkerung. Man konnte klein anfangen und dem allmählichen Wachstum der neuen Einrichtung mit Ruhe zuschauen. Je nach Belieben konnte man die einzelnen Zweige der Schulgesundheitspflege nach persönlichem Geschmack und nach örtlichen besonders günstigen Verhältnissen weiter ausbauen. So reiften in kurzer Zeit viele schöne und mannigfaltigen Früchte.

Man fing klein an mit der *Überwachung der Schulgebäude* durch den Arzt, forderte sorgfältigere Verhütung der *Infectionskrankheiten*, verlangte dann weiter *Klassenbesuche*, um schlecht aussehende Kinder zur ärztlichen Untersuchung herauszugreifen, und ging dann schliesslich über zur *systematischen Untersuchung* ganzer Schulklassen, erst aller *Schulanfänger*, dann auch *älterer Jahrgänge*. Für die Zwecke der Schule wurde der Befund der ärztlichen Untersuchung genau notiert auf einem *Schülerpersonalbogen*; die Eltern wurden durch kurze Mitteilungen von wesentlichen Krankheitszuständen benachrichtigt und ärztliche Behandlung empfohlen. Als man die Bemerkung machte, dass dieser schriftliche Rat zur Einleitung eines Heilverfahrens wenig praktischen Erfolg hatte, ging man dazu über, weitere gedruckte *Belehrungen* über die Bedeutung der vorliegenden Krankheitszustände auszugeben. Wie auch hier der Erfolg ausblieb, schritt man weiter durch zur *unmittelbaren mündlichen Beratung der Eltern durch den Schularzt*. Diesen letzten wertvollsten Schritt konnte man erst tun, nachdem man angefangen hatte, die Schulärzte loszulösen von der Privatpraxis; denn vorher waren mit solchen Elternberatungen Konflikte mit anderen Kollegen unvermeidlich. Erst der Schularzt im Hauptamt konnte als unparteiischer auftreten und das Gebiet der Elternsprechstunde frei pflegen. Meiner Vaterstadt *Mannheim* darf es zum Ruhme angerechnet werden, dass sie als erste, wohl in der ganzen Welt, den Schularzt im Hauptamte einsetzte, und ich kann in diesem Zusammenhang mitteilen, dass die von mir gleich von Anfang an kräftig betonte Notwendigkeit der Elternsprechstunde nach Ueberwindung mancher nicht geringen Schwierigkeiten sich unbedingt als richtig erwies. Die Elternsprechstunde hat bei uns eine grossartige Entwicklung genommen.

Logisch ergab sich aus der starken Betonung der Schülerhygiene die Verbindung des Schularztwesens mit den notwendigen Fürsorgemassnahmen

men für schwächliche und kränkliche Kinder. Diese letzteren müssen gepflegt werden, wollte man nicht stehen bleiben bei reiner Statistik, die, bei aller Anerkennung ihres Wertes, doch nur sehr langsam greifbare Erfolge zu erzielen vermag. Hier liegt wohl der grösste Vorteil der Angliederung des Schularztwesens an die *Communalverwaltung*. Alle Möglichkeiten, den mittellosen Kindern die ihnen notwendige ärztliche Behandlung zukommen zu lassen, waren im engen Rahmen der Gemeinde ohne weiteres gegeben. Da fast überall in der Welt der Grundsatz anerkannt wird: "Der Schularzt selbst soll nicht zugleich behandelnder Arzt sein," konnte man kranke Kinder ohne grösse Umstände dem Armen-, Fürsorge-, oder dem Wohlfahrtsamte überweisen. Mancherlei vorhandene Privatwohlthätigkeitsveranstaltungen konnte dem Wohle kränklicher Schulkinder mit Leichtigkeit nutzbar gemacht werden, weil der Weg nicht weit war.

Jedoch nicht nur die ererbten Anlagen sowie, die körperlichen und geistigen Eigenschaften kommen bei der Entwicklung in Betracht. Die Umwelt, in der das Kind leben muss und aufwächst, beeinflusst entscheidend dessen Gedeihen an Körper und Seele. So musste man auch in dieser Richtung schreiten und kam zur Einführung der *Schulschwwestern*. Hier gaben England und Amerika uns Deutschen das Vorbild. Während aber auf den britischen Inseln und in der neuen Welt die *school nurses* energisch mithalfen, die begonnene Behandlung eines Kindes zur Durchführung bringen und bei den Verbänden so wie sonst in der Krankenpflege mit Hand anlegten, beschränkte man sich am Anfang in Deutschland noch mehr darauf, die Kinder dem Arzte zuzuführen und die Durchführung der ärztlichen Verordnungen im Elternhause zu überwachen. Vielfach erblickt man in Deutschland jetzt die Hauptaufgabe der Schulschwester nicht darin, den Arzt in kleineren Verhältnissen zu ersetzen, sondern man verlangt von ihr in erster Linie *Aufklärungsarbeit über soziale Verhältnisse*. Auf Grund dieser Ermittlungen werden alle Massnahmen ergriffen, welche nötig erscheinen, um den Kindern die Hilfe zu bringen, die sie für ihre gesunde Weiterentwicklung brauchen.

Betrachten wir zusammenfassend das Bild des heutigen *Communalen* Schularztwesens, so muss unser Urteil günstig lauten. *Hätte ein staatlich geleitetes Schularztwesen bessere Erfolge haben können?*

In *fürsorgerischer* Hinsicht sicherlich nein! In *unterrichtshygienischer* Beziehung sicherlich ja! Man muss klar erkennen, dass das Schularztwesen seither sich lediglich auf das *körperliche Gedeihen* seiner Schützlinge aufbaute. Gleichzeitig muss betont werden, dass neben dem Körper auch das *Gehirn* und das *Nervensystem* unserer Jugend des ärztlichen Schutzes bedarf. Um hier etwas leisten zu können, müssten wir erst Einfluss gewinnen auf die *Unterrichtshygiene*. Die Organisation des Unterrichts liegt vielfach, und besonders bei uns in

Deutschland, vollkommen in den Händen des Staates. Einem kommunalen Beamten ist es absolut unmöglich, dieses Räderwerk zu beeinflussen.

Gerade aus diesem Grunde müssen wir hoffen, dass der *Staat* auch die Bedeutung des Schularztwesens mehr und mehr anerkennt und den leitenden Unterrichtsbehörden Aerzte als Berater beigibt. Dies Ziel werden wir aber erst dann erreichen, wenn in allen Lehrerkreisen die Überzeugung durchgedrungen ist, dass man in der Schule den Arzt nicht entbehren kann, um einen körperlich gesunden und nervenstarken Volksnachwuchs heranzuziehen.

Eine solche Erkenntnis wird andererseits bei der Lehrerschaft aber nur reifen können, wenn sie in Gesundheitspflege zweckmässig ausgebildet in den praktischen Beruf eintritt und sich an die ständige Mitarbeit des Arztes gewöhnt hat. *Vorbedingung hierfür ist wiederum, dass aber der Staat diesen Unterricht in Gesundheitspflege bei der Lehrervorbildung vorschreibt.*

Ganz zu Anfang schon verlangte der Staat von seinen Amtsärzten, dass sie regelmässig, allerdings in Zwischenräumen von Jahren, die Schulen besuchen und Bericht darüber erstatten, welche hygienischen Ausstellungen zu machen seien. Hierbei kamen ausschliesslich die Schulgebäude und die Lehrerwohnungen in Betracht.

Am weitesten ging sicher hier die schöne Verordnung unseres Bundesstaates *Baden* vom Jahre 1843, die auch die Schülerhygiene sehr kräftig und weitgehend forderte.

Es heisst dort: "Bezüglich der Schüler ist ein besonderes Augenmerk darauf zu richten, ob ihr Aussehen frisch, gesund und lebhaft ist, oder ob sich trübe, blasse, kränkliche Gesichter unter ihnen befinden, ob gewisse Krankheitsanlagen bei denselben zu bemerken sind oder wirkliche Krankheitszustände, namentlich skrophulöse Leiden besonders der Augen, des Halses, Kröpfe usw. unter ihnen vorkommen, ob sie rein gewaschen und gehalten, reinlich und nach der Jahreszeit gekleidet und ob sie hautrein sind. Den Ursachen der etwa vorhandenen Krankheitsanlagen oder merklichen Krankheitszuständen, die in der physischen Erziehung der Kinder, den häuslichen und örtlichen Verhältnissen liegen können, ist sorgfältig nachzuforschen und denselben durch Belehrung und Ermahnung und durch Ergreifung der geeigneten Massregeln, soweit möglich, zu begegnen. Auch sollen die Amtsärzte auf die Haltung der Schüler bei dem Lesen und besonders bei dem Schreiben sehen, und die Lehrer darauf aufmerksam machen, dass durch verkehrte Haltung der Schüler Kurzsichtigkeit, Brustbeschwerden und Verkrümmungen herbeigeführt oder befördert werden. Bei den höheren Schulen ist überdies noch darauf zu achten: 1. ob die gymnastischen Übungen auf eine ungefährliche, die Gesundheit der Zöglinge fördernde Weise

betrieben werden; 2. ob die Aufgaben, welche die Schüler zu Hause bearbeiten müssen, das festgesetzte Mass nicht auf eine der Gesundheit der Zöglinge nachteilige Weise übersteigen; 3. ob die allgemeine Verfügung des gleichen Jahres hinsichtlich der Verhütung der Kurzsichtigkeit der Schüler in allen Punkten gehörig beobachtet werde. Über alle diese Gegenstände sowohl in Betreff des Zustandes der Schulhäuser und der inneren Einrichtung der Lehrzimmer, als des Gesundheitszustandes der Schulkinder, der zweckmässigen Verbindung körperlicher Übungen mit dem eigentlichen Schulunterricht usw., haben die Amtsärzte sich mit den Vorständen der gelehrten und höheren Bürgerschulen und mit den Pfarrern und Schullehrern freundlich zu besprechen und sich überhaupt die Aufgabe zu stellen, ihre Besuche für die Schulen so nützlich und heilsam wie möglich zu machen, damit das Gesundheitswohl der Schuljugend gefördert und die Hindernisse, welche einer glücklichen und kräftigen Entwicklung des Körpers entgegenstehen, beseitigt werden."

Die Aufgaben der schulärztlichen Tätigkeit können auch heute nicht schöner und besser umgrenzt werden. Der Erfolg dieser Verordnung war aber kein wesentlicher. Die Justiz, die öffentliche Gesundheitspflege für die Erwachsenen und nicht zum mindesten die Privatpraxis, welche die Amtsärzte nötig hatten, um sich und ihre Familie zu erhalten nahmen die Kraft unserer staatlichen Medizinalbeamten derartig in Anspruch, dass sie diesem Teile ihre amtlichen Aufgaben offenbar wenig Beachtung schenken konnten. Diese vorzügliche badische Verordnung wurde später durch andere Bestimmungen ersetzt, die solch weitgehende schulhygienischen Forderungen nicht mehr enthielten.

Aber auch in unseren anderen Bundesstaaten waren in den Dienstweisungen für die Physici, Kreisärzte, Bezirksärzte, wie sie immer heissen, Bestimmungen, welche besondere Aufmerksamkeit für die Schulhygiene erforderten.

Diese Bestimmungen waren gewiss nicht ganz so zwecklos, wie vielfach angenommen wird. Beschränkten sie sich auch nur auf Kontrolle der ansteckenden Krankheiten und auf die Bauhygiene gelegentlich seltener Besichtigungen, so hatten sie doch den gewiss nicht zu überschätzenden Vorteil, dass diese amtsärztliche Aufsicht über das ganze Staatsgebiet, über Stadt wie Land, ausgeübt wurde. Hicobei muss weiter betont werden, dass die an diese Aufsicht sich anschliessenden gesundheitlichen Forderungen ausnahmslos Erfüllung fanden, weil sie von vornherein die Staatsautorität im Hintergrund hatten. Deshalb war diese Aufsicht wirksam und hatte trotz des quantitativ geringen Umfanges qualitativ gute Erfolge.

Was nützen der gesamten Volksaufzucht die besten Gesetze, wenn sie nur papierene Bestimmungen bleiben oder einem zu kleinen Teile

der Bevölkerung zugute kommen? So haben z. B. nach Mitteilungen, die der bekannte Schulhygieniker Prof. Dr. L. Burgerstein Wien, im Jahr 1912 auf dem XV. Internationalen Kongress für Hygiene und Demographie in Washington gab, Schulärzte für die staatlichen *höheren Schulen Russland* seit 1871, *Ungarn* seit 1885, *Serbien* seit 1899, *Bulgarien* seit 1903. In den höheren Schulen ist nur ein sehr kleiner Teil der Jugend.

In Ungarn waren sehr gute staatliche Anordnungen längst erlassen, bevor ein irgend nennenswerter Teil selbst der höheren Schulen wirklich Schulärzte anstellte. Ob in den anderen genannten Staaten das Schularztwesen später auf die Volksschulen ausgedehnt wurde, konnte ich nicht erfahren.

Am grossartigsten hat jedenfalls *Japan* das Schularztwesen geregelt. Im Jahre 1896 ordnete ein kaiserlicher Erlass die Bildung einer besonderen Schulhygienekommission an, nachdem schon 3 Jahre vorher Schulärzte in Tokio und Kobe versuchsweise angestellt waren. Seit 1898 sind alle japanischen Volksschulkinder unter schulärztlicher Aufsicht. Nur in Gemeinden von weniger als 5000 Einwohnern darf der zuständige Regierungs- Beamte unter besonderen Umständen von der Aufstellung von Schulärzten absehen.

Auf Japan folgte zeitlich zunächst der deutsche Bundesstaat Sachsen-Meiningen, wo durch Erlass des Staatsministeriums vom 2. April 1900 für alle Volksschulen des Landes, und kurz darauf (1. Mai 1901) auch für alle höheren Schulen die Anstellung von Schulärzten angeordnet wurde. Es mag dies hier nur kurz erwähnt sein. Die deutschen Verhältnisse sollen später etwas näher besprochen werden.

In grosszügiger Weise hat dann *England* das Schularztwesen in den Jahren 1907, 1908 und 1909 geordnet. Man stellte dort nicht nur Schulärzte an, sondern sorgte auch durch gesetzliche Bestimmungen dafür, dass im Anschluss daran die als nötig erkannten Massnahmen, die Schulspeisung und die Behandlung der Schulkinder auf gute Wege geleitet wurden.

In der *neuen Welt* haben wehrere *Staaten der Union* und *Mexiko* das Schularztwesen geordnet. Umfang und Art der Durchführung sind hier natürlich auch sehr verschieden. Aber auch hier sind gewisse Städte wie *Boston* (1894) *Chicago* (1896) und *New-York* (1897) vorangegangen. Einzelne Staaten haben dann später die schulärztliche Aufsicht speziell gefordert.

Wegen der besonderen Verhältnisse der Landgebiete ist jedoch sicherlich in den Vereinigten Staaten die Durchführung solcher gesetzlicher Bestimmungen viel schwieriger wie in unserem eng bevölkerten Europa. Ueber amerikanische Verhältnisse will ich jedoch hier lieber lernen wie selbst belehren. Trotz oder wegen der Grösse der Literatur

sind die Nachrichten, die wir in Deutschland von Amerika und die sie auch wohl von uns Deutschen bekommen, doch noch mangelhaft und beweisen gerade die Nützlichkeit der Internationalen Kongresse. Der Internationale Meinungs-austausch ist gewiss eines der grossartigsten Mittel für wissenschaftliche und praktische Förderung einer bestimmten Sache.

Im Kaiserreich *Oesterreich* wurde im Jahre 1909 wenigstens an allen Lehrerbildungsanstalten und Seminarübungsschulen, die vom Staate selbst unterhalten werden, Schulärzte staatlich angestellt.

Wenden wir uns dem *Deutschen Reiche* zu.

Wie bereits erwähnt, hat das Herzogtum *Sachsen-Meiningen* zu Beginn des Jahrhunderts das Schularztwesen geregelt, an allen Volks und höheren Schulen, allen Gymnasien und Realanstalten, sowie an allen Seminaren und Privatschulen Schulärzte angestellt. Die Schulärzte besuchen zweimal, in Seminaren dreimal im Jahre die Anstalten und untersuchen die neu eintretenden Schüler. Alle 4 Jahre werden die Kinder nachuntersucht.

Das Ministerium des Innern im Grossherzogtum *Hessen* hat schon zu Beginn des Jahres 1902(6.I.1902) Anstellung von Schulärzten empfohlen und ein Jahr später (13.I.03), nachdem festgestellt worden war, dass, sich einzelne Gemeinden und Städte sehr ablehnend verhalten, eine Dienstanweisung für Schulärzte in ländlichen Gemeinden herausgegeben, um die Einführung der Institution zu erleichtern. Die hessische Dienstweisung lehnt sich nahe an die von *Sachsen-Meiningen* an. Ohne dass ein Zwang ausgeübt wurde, haben durch dieses Vorgehen fast alle Gemeinden des hessischen Landes Schulärzte bekommen.

Acht Jahre lang sah man der *kommunalen* Entwicklung des Schularztwesens ruhig zu. In dieser Zeit haben auch unsere freien Hansestädte die ja heute für ihr Gebiet noch die Staatshoheit haben, *Hamburg*, *Bremen* und *Lübeck*, das Schularztwesen geregelt.

Dann kam ein ganz kleines Fürstentum *Birkenfeld*, welches im Jahre 1910 ein ganzes Schularztgesetz schuf, nach dem sogar ein Schularzt im Hauptamte Personalbogen für jedes Kind anlegen und alljährliche Untersuchungen durchführen muss.

Sodann hat im Jahre 1910 das Grossherzogtum *Baden* in dem neuen Schulgesetz bestimmt, dass jede Volksschule mit mehr als 10 Klassen einen Schularzt haben muss. Die Anstellung dieser Schulärzte ist nahe zu durchgeführt. Vom Unterrichtsministerium ist eine staatliche Dienstordnung für Schulärzte erlassen, die Untersuchungen aller Schulneulinge, aller Kinder im 9 und 10 Lebensjahre, Überwachung der kränklichen Kinder und eine Schlussuntersuchung vorsieht. Für das ganze Land ist ein einheitlicher Gesundheitsschein vorgeschrieben. Kleinere Gemeinden werden zwar nicht gezwungen, einen Schularzt

anzustellen, dort übernimmt aber in der Regel der Bezirksarzt die Arbeiten des Schularztes.

Die höheren Schulen, Gymnasien und Realanstalten haben in Baden keinerlei Schulärzte.

Für das kleine Fürstentum *Lippe-Detmold* ist auch auf 1. April 1912 ein Schularzt im Hauptamte staatlich angestellt.

Im Königreich *Württemberg* ist die gesamte Schulbevölkerung durch Gesetz von 1912 der ärztlichen Aufsicht unterstellt. Die Oberamtsärzte (*Physici*) sind von der Privatpraxis losgelöst und fungieren neben ihrer Tätigkeit als Gerichtsärzte und öffentliche Gesundheitsbeamte als Schularzt in ihrem ganzen Bezirke. Einzelne grössere Städte haben besondere Schulärzte. Die Schulärzte haben die Schulanfänger und die anderen Kinder alle 2 Jahre einer systematischen Untersuchung zu unterziehen, sowie selbstverständlich die Durchführung schulhygienischer Massnahmen zu fördern.

Im Königreich *Bayern* sind an einzelnen staatlichen Gymnasien versuchsweise Schulärzte angestellt.

Im Grossherzogtum *Oldenburg* ist jetzt erst in dem Jahre 1913 ein besonders Schularztgesetz angenommen worden, durch welches Schulärzte bei sämtlichen Volksschulen des Landes angestellt werden. Das Gesetz geht am weitesten, da es ärztliche Untersuchungen für Kinder verlangt.

Auch in *Lippe-Detmold* sind Schulärzte an allen Schulen staatlich verlangt.

Unser grösster Bundesstaat *Preussen* hat dem Schularztwesen in letzter Zeit das lebhafteste Interesse zugewendet. Das preussische Ministerium hat besondere Erhebungen machen lassen, die gewiss als Vorboten für weitere staatliche Massnahmen angesehen werden dürfen.

Vergleichen wir nun das, was von den *Städten* und von den *Staaten* für Schulärzte geschehen ist, so haben sicher die Städte *quantitativ* und *qualitativ* mehr geleistet. Ungerecht wäre es, daraus einen Tadel hören zu wollen. Diese Ungleichheit liegt begründet in den Verhältnissen. Der Staat kann von sich aus zunächst viel schwerere Versuche machen wie eine einzelne Stadt. Dann aber muss der Staat bei allen Bestimmungen beachten, ob die geforderten Massnahmen wirklich überall durchführbar sind. Die grossen Verschiedenheiten zwischen den Lebensverhältnissen, Schuleinrichtungen und dem Gesundheitszustand der Land und Stadtbevölkerung erschweren in ganz erheblichem Masse die Festlegung von Bestimmungen für eine Schularztorganisation, die allen Verhältnissen gerecht werden soll.

Der *Staat* wird sich wohl auch in Zukunft nur immer darauf beschränken müssen, *grundlegende Forderungen gesetzlich festzulegen*. Hierbei sollen die Staatsverwaltungen sich die Erfahrungen zu Nutzen

machen, die in praktischer Arbeit gesammelt sind. Es kommt gewiss nicht darauf an, dass der Staat eine allzu sehr ins kleinliche gehende Dienstanweisung ausarbeitet und als Muster empfiehlt oder gar vorschreibt. Wichtig sind nur einzelne gesetzliche Bestimmungen, die sich vielleicht in folgender Weise zusammenfassen lassen:

1.) *An allen Schulen* der kleinen, wie der grossen Gemeinden, an allen Volks- und höheren Schulen, wie auch Real- und Gymnasialanstalten und Lehrer- wie Lehrerinnenseminaren *sind Schulärzte zu bestellen.*

2.) *Alle Kinder ohne Ausnahme sind der schulärztlichen Beaufsichtigung zu unterwerfen.* Die Durchbrechung dieses Prinzips durch Zulassung privatärztlicher Untersuchungsbefunde ist unzweckmässig.

3.) Die *schulärztliche Untersuchung* muss zu *Schulbeginn* erstmals vorgenommen und *während der Schulpflicht* im achten oder neunten Lebensjahr *mindestens einmal wiederholt werden*, um zu erkennen, ob die Leistungen in der Schule evtl. durch Krankheitszustände beeinträchtigt werden. Die Schlussuntersuchung vor der Schulentlassung ist wegen der Berufswahl zweckmässig.

4.) *Schwächliche und kränkliche Kinder sind besonders zu überwachen und durch Fürsorgemassnahmen in ihrer Entwicklung so zu fördern, dass sie widerstandsfähig in das Erwerbsleben eintreten.*

5.) Der Schularzt hat auch den Gesundheitszustand der *Lehrpersonen und der Schuliener* zu überwachen.

6.) *Der Schularzt soll der sachverständige Berater der Schulleitung in allen Fragen der Schulgesundheitspflege sein*, soll also nicht nur Schülerhygiene treiben, sondern auch zu bauhygienischen und unterrichtshygienischen Fragen gehört werden.

7.) *Der Schularzt oder ein Vertreter der Schulärzte muss gesetzliches stimmberechtigtes Mitglied der lokalen Schulbehörde sein.*

8.) *An den Lehrerbildungsanstalten hat der Schularzt auch den Unterricht in Gesundheitspflege und Schulhygiene zu erteilen.*

Wenn das festgelegt ist, dann ist wohl alles geschehen, was der Staat tun kann. *Die Durchführbarkeit dieser eng begrenzten Mindestforderungen auf dem Lande wie in der kleinen Stadt ist längst erwiesen.* Alle weiteren Einzelheiten kann man den lokalen Verhältnissen entsprechend gestalten.

Überblicken wir das Gesagte, so werden wir zusammenfassend zu dem Schlusse kommen: Unter communalem Schutze hat sich das Schularzt-

wesen glücklich und vielseitig entwickelt. Das Endziel der ärztlichen Beaufsichtigung der Schule geht aber darauf aus, die gesamte heranwachsende Volkszukunft stark und glücklich zu gestalten. Gelegenheit hierzu ist nur gegeben in der Schule und durch die Schule. Nur durch die Mithilfe des Staates ist dies Ziel zu erreichen. *Ein voller Erfolg des Schularztwesens wird nur dann möglich sein, wenn der Staat gewisse Mindestforderungen gesetzlich festlegt, welche die allgemeine Durchführung des Schularztwesens garantieren.*

GOVERNMENTAL AND MUNICIPAL INSTITUTION OF SCHOOL PHYSICIANS

BY

P. STEPHANI

The institution of school physicians, as a retrospective glance over this growth shows, has developed under the protection of the state as well as of the town, respectively communities.

Which must wish the development of the institution more, the state or the municipality?

The only answer can be: the State.

We want to develop our delicate little human plants, not only intellectually but bodily as well, to such an extent as to enable them to fulfill all requirements of their later position in the industrial life of the nation and to contribute to the best of their ability to a successful furtherance of the country we call our fatherland. A municipality can hardly tell whether the child will adhere to its native soil, and whether it will convert the money expended on its education and welfare for the benefit of its native town. A community can even be sure that the greater part of its children will emigrate and use their school knowledge abroad.

There is no doubt that a community has also a vital interest in the keeping up and promotion of our national strength. Its vigor and growth decrease and increase with those of the state.

The state, however, can surely depend on the majority of its youth, speaking the native tongue, later on working for the benefit and promotion of the interests of the state, be it in the limited service of the empire itself, be it in a town or small community, or even abroad.

Everywhere has the state recognized its duties towards the youth. Compulsory education is required all over by state law and is under state's supervision.

The state is extremely active in matters of communal and public health and by no means leaves its administration and promotion to the community alone.

Not only in Germany but in most other states of the world the communities are charged with all the expenses for education and care of youth. Thus the practical conditions were the reason why the institution of school physicians was principally promoted and completed by communal administration

He who looks at the results already achieved cannot fail to be contented with the development of the institution of school physicians under communal administration.

The possibility of a free development is much better in a small sphere of a communal administration, than in a much greater and more extended state. We could begin modestly, and progressively ask for more. Supervision of school buildings, scrupulous prevention of infectious diseases, medical examinations of pupils, active measures of care, that is the scale by which one had to ascend on gradually with the development of the institution of school physicians.

The most important step forward was to give direct oral counsel to the parents through the school physician. Only the professional school physician could appear as a non-party man, and act freely in the matter of consultations with parents. To my native town, Mannheim, must be attributed the fame of having been the first, even in the whole world, to institute the recognized office of school physicians, and in this connection I may say that the necessity for consultations with parents, strongly emphasized by me from the very beginning, has finally proved itself to be totally justified. The consultations with parents have shown most satisfactory development during the last nine years. The cases of examination went up from about 500 to 5,000.

Out of the accentuation of the hygiene of pupils the combination of the institution of school physicians with the necessary measures of care for weak and sickly children was the logical result inasmuch as the school physician himself should not at the same time be a practising physician. The local administrations being charged with the caretaking of poor and sickly children, the school physician therefore was a communal institution in his very place.

As the environment must be taken into consideration, together with the bodily welfare, we arrived at the introduction of school nurses. There in England and America were our models. But whilst in the British Islands and in the New World these school nurses gave energetic assistance in carrying out the treatment commenced on the child and assisted in applying bandages, as was their former custom in sick nursing, in Germany their duties were more restricted. They had merely to bring the children to the doctor and to supervise the carrying out of his orders in the parent's house. At present in Germany it is acknowledged in many ways that the principal duty of the school nurses is not in taking the place of the doctor in unimportant cases, but one demands of them in the first place the work of explaining social conditions. By reason of these discoveries, all measures which appear necessary to give the children that assistance they require for the further development of their health, are taken.

In summing up, if we consider the picture of the new municipal institution of school physicians, our opinion of it cannot be anything

but favorable. Could an institution of school physicians under state administration have shown better results?

As far as the general welfare of the children is concerned, surely not! As regards the hygienic arrangement of the lessons, the answer must be yes! School physicians should try their best to get more influence in arranging the lessons. For a municipal official it is absolutely impossible to move the cogs of this machine of education.

Precisely for this reason we must hope that the state may interest itself more and more in the importance of the institution of school physicians; and may delegate some to act as advisers to the leading educational authorities.

The most far-reaching in this respect was an old order of the Grand Duchy of Baden, which did not only accentuate the hygiene of buildings but also the individual hygiene of pupils and the measures of care.

The duties of a school physician of to-day cannot be better defined as in that stately order of 1843.

Not only in my own fatherland but in all German federal states the physicians of government were required to give their special attention to school hygiene; this, however, happened very seldom.

They were limited only to the control of infectious diseases and hygiene of the buildings, and thus had the certainly inestimable advantage that this official medical supervision was extended over the whole state, in town and country alike. And it must furthermore be emphasized that the hygienic requirements attached to this supervision were unexceptionally performed, because from the outset they were backed up by state authority. This supervision was therefore effective, and in spite of its quantitatively narrow sphere had a qualitatively good success.

The following countries have had school physicians for state *high schools*: Russia since 1871, Hungary since 1885, Servia since 1899, and Bulgaria since 1903. In the high schools is only a very small proportion of the youth of these countries.

Japan has most certainly adopted a wonderful method of regulating its institution of school physicians. Since 1898 all Japanese elementary school children have been under medical supervision. Only in communities of less than 5,000 inhabitants the governing body may concern, on account of special circumstances to abstain from the introduction of school physicians.

After Japan next follows in order of time the German federal state, Sachsen-Meiningen.

In the years 1907, 1908 and 1909 England then began with the institution of school physicians on a large scale. Here these were not only introduced, but furthermore, care was taken by law; that in connec-

tion therewith, measures recognized as necessary, the feeding and treatment of school children, were successfully introduced.

In the New World the institution of school physicians has been legalized by several states of the Union and by Mexico. Here also the scope and manner of the organization are naturally widely different but certain towns such as Boston (1894), Chicago (1896) and New York (1897), took the lead. Later, individual states required by law this medical supervision.

However, on account of special conditions in that continent, the carrying out of such legal measures in the United States of America is certainly much more difficult than in our thickly populated Europe. In spite of, or on account of the amount of literature, the information which we get in Germany from America, and which perhaps you also get from us Germans, is nevertheless incomplete, and proves precisely the usefulness of international congresses. The exchanging of opinions between nations is certainly one of the best means for the scientific and practical furtherance of any given subject.

In the Austrian Empire school physicians were instituted by the state in the year 1909, at least in all teachers' training colleges and school-practice institutions, which are kept up by the state itself.

Let us now turn to the German Empire. As already mentioned, the Duchy of Sachsen-Meiningen, in the beginning of the century, organized the institution of school physicians and introduced officers into all elementary and high schools, into all high, grammar and modern schools, as well as into all colleges and private schools. These visit the above-mentioned institutions twice, the colleges three times, during the year, and examine the newly-entered pupils. Every following fourth year the children are re-examined.

In order to facilitate the introduction of the institution, the Ministry for the Interior of the Grand Duchy of Hesse had already, at the beginning of 1902 (Jan. 6th, 1902), recommended the introduction of school physicians, and a year later (Jan. 13th, 1903) when it had been proved that several communities and cities had flatly refused, enacted regulations for the school physician service in rural communities. Those of Hesse approach closely those of Sachsen-Meiningen. By these steps, which did not embody any compulsion, nearly all the communities of the territory of Hesse got school physicians.

For eight years the other federal states merely watched the commercial development of the new institution. During this time, also our free Hansa towns, which have the sovereignty of their territory—Hamburg, Bremen and Lübeck and the principality of Reuss older line—have organized the medical supervision of pupils.

Then followed a very small principality by the name of Birkenfeld.

which in the year 1910 created an entirely new law for school physicians, according to which medical official had even to keep personal records for each child and to carry out yearly examinations.

Furthermore, in the year 1910 the Grand Duchy of Baden has decreed in the new school law that every elementary school with more than ten classes is compelled to have a school physician. The appointments of these have been nearly completed. The Ministry of Public Instruction has issued an official regulation for school physicians which provides the examination of all beginners and all pupils of third grade, the supervision of sickly children, and final examinations. For the whole country a uniform certificate of health has been drafted. Smaller communities, however, are not forced to employ a school physician, but here, generally, the district's physician performs these duties.

High schools, such as high grammar and modern schools in Baden have no school physician.

For the small principality of Lippe-Detmold a school physician has been appointed by the government on the first of April 1912.

In the Kingdom of Wurttemberg the entire school population has been put under medical supervision by the law of 1912. Private practices have been forbidden to the chief physicians, and besides their activities as law court physicians and officers of public health (coroner physicians) they exercise the functions of a school physician throughout their entire district. Some larger towns have their own coroner, physicians have to submit every year school beginners, and the remaining children every second year, to a systematic examination, and, as a matter of course, to give every assistance to the promotion of measures for school hygiene.

In the Kingdom of Bavaria school physicians have been experimentally introduced into various grammar state schools.

In the Grand Duchy of Oldenburg, only recently in 1913, a special law, which appoints school physicians to all elementary schools of the country, has been passed. This law is the most far reaching of all, as it requires the medical examinations of children every year.

Our largest federal state, Prussia, also has lately taken a lively interest in the institution of school physicians. The Prussian Ministry has caused special investigations to be made, which may certainly be taken as auguries of further official measures.

Presumably the state will in future be also compelled to limit its activities to the establishing by law of the fundamental requirements. In doing this the governments should make use of the experience gained by practice. It is surely not necessary for the state to work out the most detailed rules and regulations for the service and to recommend

them as an example or even required them. Important only are some legal provisions which probably may be summarized as follows:

1. School physicians are to be appointed to all schools of the small communities as well as of the large ones, to all elementary and high schools, as well as to modern and high grammar schools and teachers' training colleges.

2. All children, without exception, are to be subject to medical supervision. The breach of this principle by the admission of a certificate of private examination does not meet the purpose.

3. The examination by the school physician is to be operated for the first time at the beginning of the school career and is to be repeated at least once during the school life, in the eighth or ninth year of age, in order to see whether the results in the school are detrimentally affected by conditions of weak health. The final examination before leaving the school is advisable on account of the choice of profession.

4. Weak and sickly children are to be specially superintended and are to be furthered in their development by careful measures, so as to enable them to enter the struggle of life as fully equipped as possible.

5. The school physician has also to supervise the conditions of health of the teachers and janitors.

6. The school physician should also be the expert counsellor of the Board of Education in all questions of school hygiene, not only as far as the pupils are concerned but also as regards the dwelling and the teaching.

7. The school physician or the representative of the school physicians must be by law a member of the local School Board, with the right of voting.

8. In teachers' training colleges the school physician has also to teach general and school hygiene.

With these provisions all is done that the state can do. The possibility of carrying out these closely limited minimum requirements, in the villages as well as in the small cities, has long been proved. All further details can be arranged according to local circumstances and can be left to the communities.

Looking over what we have said we shall come to the following brief conclusions: Under municipal protection the institution of school

physicians has developed favorably and extensively. But the final purpose of the medical supervision of the school is to make the *entire growing-up youth of our nation* strong and happy. Chances of this are only given in the school and by the school, and this purpose can only be reached by the assistance of the state. A complete success of the institution of school physicians will only be possible if the *state* fixes by law certain minimum requirements which guarantee the general introduction of the school physicians' institution.

COMPULSORY MEDICAL INSPECTION OF SCHOOLS IN MASSACHUSETTS FROM THE ADMINIS- TRATIVE STANDPOINT

BY

DAVID SNEDDEN

In 1906 the Legislature of Massachusetts passed a law requiring the appointment in each town and city of one or more school physicians. The law specifies some of the duties of these physicians and leaves others to their discretion. It is required that teachers shall annually examine school children as to sight and hearing. A later law (1911) permits towns to appropriate money for the employment of school nurses. No provision is made for the enforcement of the Medical Inspection Law, or for state supervision of its operation.

At intervals of three or four years, the State Board of Education procures reports from the towns and cities of Massachusetts as to the operation of the laws referred to above. But for reasons given below an exhaustive statement of the results of their operation is not yet possible. Some effects may, nevertheless, be described with a fair degree of accuracy and some provisional conclusions be drawn.

Massachusetts consists of some 354 so-called municipalities (towns and cities) ranging in size from such cities as Boston, Worcester and Springfield to rural towns having but a few hundred residents. Almost all the municipalities of the State have complied with the law so far as the appointment of school physicians is concerned; but in numerous cases the compensation provided has been little more than nominal. In some of the larger and in many of the smaller communities there is as yet no adequate conception of the purpose and possibilities of medical inspection. The local superintendents of schools in many instances take only a perfunctionary interest in the matter of school hygiene. On the other hand, progressive communities—some large and some small—have been encouraged to a splendid degree of health oversight of school children. Not only have the provisions of the law been admirably carried out, but a variety of experimental efforts in the conservation of the health and in the promotion of the development of school children have been made; and some of these have already borne excellent fruit. Throughout the State the legislation of 1906 has, during the seven years of its operation, produced some important results. Perhaps the most significant of these has been the slow but certain education of many communities as to the possibility and desirability of controlling and

limiting communicable diseases in schools. There is a general consensus of opinion that the prevalence of communicable diseases has been materially reduced through the efforts of the school physicians. The sight and hearing tests made by the teachers are also producing good results. Responsibilities of health oversight through the agency of the school nurse are being demonstrated, even in some comparatively small communities.

The general effects of the legislation have been good; it cannot be said that it has done any harm, nor has it entailed heavy expenditure. But it is also clear that adequate results are as yet found in only a few communities. In many towns in Massachusetts it is probable that additional administrative agencies must be provided before satisfactory health oversight of school children will be an actuality.

The first of these, in the estimation of the writer, should be a specialist in medical inspection employed by the state to give his entire time to the work of advising with and assisting school physicians in the execution of their work. Many of the practitioners, now called upon to give a small proportion of their time to school health inspection, have not had the opportunity to familiarize themselves with the needs and possibilities of their services, except as these relate to communicable diseases. They are unfamiliar with recent developments in child hygiene, and possess insufficient knowledge of the effect of school studies, environment, nurture, play and rest upon health. A special agent, an expert in these matters, employed by the state, should be able, with comparatively little difficulty, to render available for school physicians a large amount and variety of information as to the effective performance of their work. In large part the material for this purpose is now available within the state itself in those communities which have taken the initiative in developing adequate health supervision.

Through the efforts of this specialist employed by the state it would be possible to study the effects of the operation of the present law and the possibilities of the further development of medical inspection. On many points more extended information is needed.

For example, the law now requires the school physician to approve all employment certificates. But this approval is now perfunctory in most instances because physicians themselves possess so few standards as to the relation of physical development to various kinds of occupation.

Again, in the case of chronic ailments, the machinery by which the recommendations of the school physician are to be carried out is crude, and of uncertain operation. Many educators believe that only through the agency of the school nurse will it prove possible to have parents give needed attention to the physical deficiencies of their children.

The present law permits school committees, even in small com-

munities, to appoint more than one school physician. It is a serious question whether there should not be a concentration of responsibility and an opportunity for one physician to specialize in the work of health oversight. In no other way does it seem practicable to carry effective health oversight beyond the field of the communicable diseases, to the end that it may deal with the more obscure, but also more important matters of chronic defect and the systematic promotion of general physical well-being.

The existing Massachusetts law provides for the ultimate control of medical inspection by school committees, but a special provision is made to the effect that in cities where local Boards of Health, at the time of the passage of the law, had made beginnings in the work, that authority should continue in control. As regards the relation of medical inspection to communicable diseases, this provision was probably not unwise. But when the fuller possibilities of medical inspection are considered, it is a serious question whether a duplication of the authorities in charge of supervision of school children and school work is desirable. It is the opinion of the writer that in those cities in which health oversight of school children is directed by local boards of health, there must ultimately be some rearrangement of administration whereby the authority of the school committee shall be increased in all that pertains to general health oversight, proper reservations of power being left to the Boards of Health to deal with acute conditions of communicable diseases.

A large variety of special problems await the study of a State specialist. Dental inspection and school dentistry is one of these. The presence in the school of subnormal children is another. The improvement of instruction in school hygiene is a third. The hygiene of school studies and school environment is a fourth. In these and many other related fields what we now need most is expert information and local studies made by the expert.

DISCUSSION OF

DAVID SNEDDEN'S PAPER

BY

B. FRANKLIN ROYER

We have been going through the same sort of trial in Pennsylvania within the last few years that has been noted with regard to inspection of school children in both Massachusetts and New York. In Pennsyl-

vania the school laws of the Commonwealth have recently been revised, a special Committee having worked over codification of the school laws for four years; the first code drafted by this Commission veing voted by the Governor in 1909 upon a mere technicality; the Commission was held over until 1911 and presented a second bill. This Commission, composed entirely of educators, not one of whom was a medical man, after studying the question of medical inspection in schools, drafted certain articles making medical inspection mandatory for all public schools, placing it under the direction of the school authorities in districts of the first, second and third class, that is, districts of more than 500,000 districts from 30,000 to 500,000 population and districts of from 5,000 to 30,000. In fourth class districts, a population of 5,000 and less, their first draft of a bill provided for medical inspection to be placed entirely under the jurisdiction of the State Department of Health. These educators realized that the Department of Health had better machinery for operating such work in rural districts than had the educational authorities themselves.

Many laws are the results of compromise and so with the school inspection clause of the School Code. The health authorities of Pittsburgh and Philadelphia had already in operation a well organized system of inspection and they were unwilling to give it up. An amendment was presented and accepted by the educators providing that where medical inspection was already organized under the health authorities it might be continued, provision being made for payment of the expenses of such work by the school authorities. A provision was also made permitting the appointment of health officers in any municipality to serve as school medical inspectors and a further provision giving school boards in third and fourth-class districts the opportunity to vote against medical inspection.

In large cities, I believe, it makes but little difference whether the inspection is under the school authorities or the health authorities; it may be well done by either authority. In smaller municipalities—cities of from 15,000 to 100,000 or more—it is vastly better that the sentiment of this entire Congress be heeded and that full time medical officers be provided. Where the school work is not sufficient to command the full time, then by all means employ the health officer for this work. For instance, it would be the height of folly for Rochester to take the work of school inspection from Dr. Goler of the Health Department and put it in the hands of the school authorities. School medical inspection is but one form of public education and is fully in the line of preventive medicine. The health authority is a natural educator along these lines and, if the combined work along the same lines in any community is great enough to command the full time of one director, it is very much better

that all of such educational work be directed from one head and that one head is more commonly found in the health authorities of the district. Dr. Snedden has made a very strong plea for the school nurse; Dr. Rapeer has championed the cause of the school nurse and would have her do practically all inspection. I am not inclined to go as far as these gentlemen would go, and feel it would be very much better to follow the plan outlined by Dr. Peters and use the combination of school doctor and school nurse; the school nurse to follow up cases, to give treatment where necessary and to do a high grade of sociological work or, in some instances, to have this follow-up work done by one devoting her time exclusively to sociological work combined with truant work.

THE CORRELATION OF THE WORK OF SCHOOL PHYSICIANS AND LOCAL AND STATE HEALTH OFFICIALS

BY

WM. C. HANSON

The beginning of the medical examination of school children in this country was made in the State of Massachusetts in the fall of 1894. To Dr. Samuel H. Durgin of Boston, then chairman of the city Board of Health, more than to any other one person, belongs the credit for starting the work and for establishing legislative authority to make it useful and efficient. Dr. Durgin's purpose of examining school children was two-fold: (1) To look after the physical welfare, as well as the mental development of the child, and (2) to prevent, so far as possible, the spread of dangerous diseases.

In recent years the educational authorities have come to realize the close interrelation between the physical and mental development of the child to the extent that they now consider it to be their duty to look after both.

It has thus come about that both health and school authorities claim it to be within their province to provide such inspection of the school children as to protect them from harm by reason of their attending school; not only from disease which may originate outside the school or among the school children, but from conditions of ill-health detected in the school room.

Let us see how the inspection work is conducted to-day in a Massachusetts town with a population of about 10,000 inhabitants, including a school population of about 2,000. In this town two physicians are employed by the school committee at a salary of \$150 per year. In order to supplement the work of the physicians a school nurse is employed at a salary of \$800. Although both physicians and nurse are responsible to the school committee, they conduct their work in such manner as they deem it proper, neither being guided by instructions issued by the committee.

There is, then, no supervision of the work on the part of the school committee. Moreover, neither the physicians nor the nurses are familiar with the work of the local health officials.

The school physician's business is to exclude from the school pupils found to be physically or mentally unfit for work, and those known to have any communicable disease; the local health official's business is to

discover the source of infection of any and all cases of communicable disease in the community, within or without the school, and to do all within his power to prevent the spread of infection.

The school physician, so far as he is influenced at all, follows the idea of the school superintendent of carrying out the original course of work that was planned at the beginning of the school year, and does everything that he can to prevent the school's being closed. The local health officer, on the other hand, when there is a case of scarlet fever or diphtheria, acting either with or without the advice of the school physician, closes the school through the power of the Board of Health to establish quarantine, and often unwisely and unnecessarily causes an interruption of the school curriculum.

Suppose, instead of the school physicians and nurses being in the employ of the school committees and having no official dealings with the Board of Health, the school and health inspection work is entirely in the hands of the local Board of Health—what then happens?

In a Massachusetts city with a population of about 104,000, including a school population of about 18,000, there are six school physicians in the employ of the Board of Health. Two nurses are also employed by the Board to follow into the homes many of the children with defects or diseases discovered by the physicians. Each physician and nurse does practically as he or she pleases, visits the schoolhouses and the homes of the pupils and submits his or her report at irregular intervals to the Board of Health. The Board has issued no printed or written instructions for the guidance of either physicians or nurses. One physician, for example, may and does take a great deal of interest in his work, the interest carrying him along in it, even for the small salary of \$200 per year, so that he does for the city far more than he is paid for doing; whereas another physician does his work in an irregular fashion, taking little interest in it, partly because of the small salary, and submitting his reports only when requested, if at all.

But there is one saving thing about the work as conducted in this city, for each school physician must report at once to the Board of Health every case of communicable disease in the school and in the community wherein the school is located, for he acts not only as school physician but as agent to the Board of Health. He has, however, no idea of correlating the school and health work any more than has the Board which employs him.

From what has been said, therefore, it will be inferred that whether the school inspection work is conducted by persons in the employ of the local school committee or the Board of Health, it is not supervised in the great majority of the cities and towns in the Commonwealth. This is a fact.

What is the reason for this lack of definite supervision of the work of school physicians? The answer, it would seem, is the same as applies to all health work; lack of sufficient interest and appreciation on the part of the public as to the benefits that come from work of this sort if well done, and consequently, lack of money to standardize and put the work on a practical basis.

The lowest salary paid by the school committee to-day in any Massachusetts community for school physician's work is \$25 per year; the highest, \$800 per year. School physicians in the employ of Boards of Health, of course, receive higher salaries, since their duties comprise many of the duties of a local health official; but even then \$500 is usually the limit, unless the general health duties predominate, in which case a physician may receive a salary of \$900, \$1,200, \$1,500, or, rarely, more.

Admitting the facts as presented by persons in the work, what steps can and should be taken at once to strengthen the incoordinated attempts made to examine the children in the public schools in the interest of the health of the entire community?

We know that too little money is provided for both school and community health work, and we have reason to believe that the public does not yet understand and consequently does not appreciate the importance of preventive health work. A more generous appropriation should be furnished, particularly by the local communities through the efforts of able and influential citizens who should be told explicitly, in a business-like manner, why more money is needed and how it is to be used.

In spite of the present limited appropriation, school and health officials are already obtaining much assistance from the public, some of which has been direct on the part of certain individuals, as, for example, physicians and others who are giving their time and efforts practically without financial compensation, and some indirect through the representatives of the people in the Legislature by means of legislation.

The question naturally arises as to whether the best use is made of the assistance already given. Model work in any community deserves wide recognition and may be used as a standard to which work of an imperfect sort should be brought. Has this been done?

Is there, for instance, at present any individual or board that could urge upon certain communities in the State the highest standard and method of school inspection work developed by other communities? To be able to accomplish a thing of this sort requires familiarity with local conditions throughout the Commonwealth. This, in turn, requires men of experience in preventive medicine who have been thrown in contact with business and social interests in the local communities—men of good judgment and with broad interests, whose chief aim in life is to

conserve the public health, by preventing so far as possible the spread of disease, and by pointing out all sorts of conditions and circumstances that are known to be prejudicial to health.

It is true that existing legislation may not be so complete as one might desire, but has all been done that could, to advantage, be done under such legislation as we have?

If we analyze the situation carefully, and face squarely the facts of the case, I believe we are obliged to answer in the negative.

Fundamentally it makes little difference whether school or health officials control the medical inspection of school children. The first essential is a thorough and well supervised system of school health work on the part of whichever board the local community in question sees fit to appoint. The second essential is a practical correlation of the school and community health work.

How can local school inspection work be standardized, and, to a considerable extent, be correlated with the health work in the community and that of the state as a whole? Considering the present attitude of city and town governments and the taxpayers on the question of expense, is it not imperative that we demand at once more specific and stringent legislation and thus obtain full state control of the situation?

I think not. Massachusetts has always held, and from present indications can afford to hold, strongly to the principle of local self-government. By local government, however, is not meant that a community can govern itself entirely in an isolated manner without regard to the welfare of other communities. It cannot.

Happily for Massachusetts it can be said that but few of even the most inaccessible communities show any such attitude or tendency in the management of their affairs.

What is preëminently needed in Massachusetts to-day is the bringing together of the local communities in such a way as to make it impossible for any single community not to know what constitutes, in a place of its size and characteristics, the best practical sort of school health inspection work. This is not impossible but on the contrary is a feasible thing to undertake. Moreover, in this accomplishment local communities will gradually find that such work can be brought about in a manner that is bound to be recognized by the State as a highly creditable work.

In this way, better than in any other, local interest and initiative is kept up, which is, after all, the great thing to be desired.

Now Massachusetts is particularly fortunate in having associated with the State Board of Health physicians whose chief business is to assist the local health authorities and to instruct and inform them, if necessary, on matters relating to the prevention of disease. They are,

from the nature of their position, their training, and experience, competent to do just that sort of thing which results in bringing together the health authorities of neighboring communities. That was why the Commonwealth wanted their services. Having no autocratic powers over the local authorities and standing as they do between the municipalities of Massachusetts and the health authorities at the State House, they accomplish to-day much in the way of preventing disease that cannot be definitely stated by the words of any written statute.

• Into the hands of these men, therefore, whose duties already take them to the cities and towns, could be put the supervision of the medical school inspection of the State. Just as now they advise with the health officers and boards, investigate conditions and make recommendations, so they could advise with the school physicians, observe their methods and results, and by bringing to them definite experiences of similar communities with similar problems, incite that instinctive desire for high standards which comes so much more surely and vigorously by education than by legislation.

State advisory supervision of school and community health work for the Commonwealth of Massachusetts is in the interest of economy, and is both logical and practical. It will insure local supervision of the medical inspection of schools, regardless of whether that work is controlled by the school committee or the Board of Health. It will gradually lead to a high and uniform standard of examination of the pupils throughout the Commonwealth; it will preserve local interest and initiative in all health work; it will permit local officials of the school and health boards to have such information in common as each needs, without duplication of work, and it will bring the State educational and health authorities together on a problem that demands combined action in the interest of the public welfare.

LA SANIDAD INFANTIL, LA PUERICULTURA, Y EL MOVIMIENTO DEMOGRÁFICO EN LA REPÚBLICA ARGENTINA

Las Estadísticas Demográfico-Sanitarias de la República Argentina, Su
Presentación por el Dr. José Penna. Plan General de
Instrucción y Obras de Puericultura Nacional

POR

ANTONIO VIDAL

(Extracto)

Contiene el presente estudio una exposición abreviada de los principales problemas relativos á la Sanidad Infantil, con inclusión de la parte que estrictamente pertenece á la Sanidad escolar y pedagógica; á la Puericultura y su concepto científico en la hora presente; á las direcciones de labor y obras efectivas que la higiene de la infancia reclama; y, en fin, relacionado con todo esto, en modo y sentido que no son los ordinarios, al Movimiento Demográfico de las respectivas colectividades, de los distintos países. Principalmente, debemos contraernos en la presente contribución á considerar desde los aspectos dominantes, ya que no nos sea dado examinarlos de otro modo aquí, la Sanidad infantil, la Puericultura y el Movimiento demográfico en la República Argentina. Este "Movimiento," será apreciado á la luz de las primeras estadísticas de todo el país, que justamente están imprimiéndose ahora y que han sido recogidas y metodicamente compiladas por la Autoridad sanitaria superior: El Departamento Nacional de Higiene. El Presidente de la Repartición, Dr. José Penna, ha deseado hacerlas llegar por nuestro intermedio al IV Congreso de Higiene Escolar. Con ningún aporte, ha pensado con acierto el Dr. Penna, pudiera la Argentina incorporarse á las sabias deliberaciones del Congreso, mejor que con este de la Estadística demográfica, verdadero índice de cultura sanitaria. Pues obvio es que sin el registro preciso de la población y la perdida en vidas, sin el computo exacto, verdadero "bookkeeping" de la población, no se concibe una higiene científicamente basada:

Pasemos desde luego á indicar en forma brevísima y en lo posible comprensiva, los propósitos, que inspiran la presente contribución. Con los propósitos, naturalmente, las ideas fundamentales que los sugirieran y una que otra información concreta, uno que otro dato necesario. Más sin penetrar en la intimidad de ninguna cuestión secundaria. Compréndese, en efecto, dada la misma vastedad del

asunto, que no podemos detenernos en el análisis prolijo de punto alguno, siquiera fuese de los más estrechamente vinculados al programa del Congreso. Justamente, no son esclarecimientos parciales, de tal ó cual clase, los que por el presente nos atraen, sino más bien, diremos, una presentación de conjunto. La cual en nuestro sentir, armoniza con exigencias y puntos de vista eminentemente actuales. De una actualidad á la vez que científica, social. He aquí dichos propósitos:

1. Esbozar la sanidad infantil contemporanea y las corrientes de acción que sugiere y determina. De otro modo: Reflejar en sus principales aspectos, en sus rasgos mas salientes la intensa actividad de pensamiento y de acción que en las sociedades modernas de cierta cultura se manifiesta hoy y que logicamente está llamada á adquirir dentro de poco, vigor y eficacia mayores, en torno á la infancia: Crianza y desarrollo del niño; puericultura en el sentido estricto; defensa profilactica en toda edad, condición individual y exterior, etc.; instrucción en medio salubre, sobre base fisiológico firme y según metodos buenos, inspirados en el conocimiento integral del niño y de los mecanismos orgánico-psíquicos; obras médico-pedagógicas; instituciones varias de sanidad, protección y selección infantil; laboratorios y centros destinados á la indagación paidológica, pediátrica, de alimentación y de examen, etc., etc. (Sobre la variada "morfología" de las obras y fundaciones, ya volveremos).

En todos los pueblos de evolución avanzada son manifestas hoy las impulsiones pro-infancia. Pero, en algunas sociedades de Europa: Francia, Alemania, Austria, Bélgica, Inglaterra, Italia, etc., ellas van alcanzando graduaciones y formas muy altas. Testificalo la rica literatura científica; y la diversa y nutrida información traída á las ultimas asambleas sabias dedicadas al cuidado del niño. Asi, por ejemplo, constituye toda una manifestación demostrativa, el Congreso celebrado en Berlin, 1911, para estudiar la Protección de la Primera Infancia y las Gotas de Leche, que son como su simbolo expresivo. (Kongress fuer Saeuglingsschutz); Congrès pour la Protection de l'Enfance du premier age (Gouttes de lait); Congress for the Study and Prevention of Infantile Mortality.

Pero, más que la labor científica y de exposición y critica, es esa otra labor, real actuante, que se cumple á diario en el niño y en torno á la infancia, más auxiliada, esta, cada día, más sostenida en sus derechos á la vida sana, al desarrollo pleno, la verdaderamente elocuente en el sentido que tratamos.

Son determinadas instituciones, como las de Porchefontaine y Charlottenburgo, que hemos examinado personalmente hace pocos meses con suma atención y que volveremos á nombrar luego, son las

modernas instituciones de Puericultura complejas, ricas de medios é integradas científicamente, eficientes, en sumo grado, muestras vivientes de lo que hoy puede y podrá mañana, la corriente que nos lleva á respetar y proteger al niño.

Por lo que hace á los Estados Unidos, el gran país que hoy nos alberga, sus impulsiones en torno á la Puericultura, que se nos permita emplear la expresión, aquí también, donde no es de uso parecen ser pronunciadas, como cabe inferir de su poderoso desenvolvimiento. Estarían ahí, si no, para probarlo, la acción y labores implicadas por el "Visiting Nurse Movement," la "Child Welfare Work," el "Certified Milk Movement," ciertas realizaciones como las "Baby Farms" y un sin número de sociedades que bajo denominaciones varias, persiguen objetivos parecidos á las "Milk and Baby Hygiene Association" de varias ciudades. Y, por arriba de todas ellas, la notable Asociación para el estudio y prevención de la mortalidad infantil, que más adelante nombraremos otra vez. Por nuestra parte, nos prometemos penetrar hasta donde los medios nos lo permitan en la intimidad de las obras americanas de Protección al niño. Por lo que hace á las obras Argentinas, nos ocuparemos de ellas más adelante.

2. Inquirir la razón de ser del movimiento pro-infancia; discernir las causas á que obedece la expansión de esas obras, el activo desarrollo de esas instituciones.

Considerados los hechos de modo general (y desde cierta altura, precisa asignarse dos fuentes, dos orígenes, á ese movimiento. El primero radica en el vigor creciente de los sentimientos generosos, altruistas, á medida que se fortalecen vinculaciones éticas que afirman una conciencia social. El segundo en las ventajas reales, en las propias conveniencias, bien percibidas gracias al saber progresivo. El niño es el hombre, y el hombre es el factor primero del capital social, de las riquezas y fuerzas colectivas. Preservar al niño y cultivarlo, será pues ofrecerse probabilidades, darse poderío. La población (acrecento, sobre todo en elementos nativos) es la principal base de la potencia, de la grandesa; la Despoblación (decrecimiento) es á la vez indicio y causa de debilidad, de decadencia.

Con respecto á la defensa de la primera infancia y á la protección del niño en general, conviene sea detenidamente examinado, tal cual hoy se manifiesta, atribuyéndosele la severa significación que le es propio, este complejo y por tantos motivos interesante fenómeno demográfico social: la depoblación.

En este examen, necesariamente complicado porque es complicado en su propia realidad, el fenómeno á que se refiere, convendría encarar determinados aspectos que se relacionan de modo más directo con la

higiene pedagógica. Muy particularmente, las nociones de "Maternalogía" y "Puericultura" que deben transmitirse por la escuela. Ello interesa hoy vivamente á higienistas, pensadores, filósofos, sociólogos. En los estudios luminosos de Lavasseur, Cheysson, de Molinari, Bertillon, Ad Coste, Tallquist, Jaubert, Pinard, Fournier, Maurel, Arsene, Dumont, Deburý, de Felice, Garnier, Ract, etc.; para no nombrar sino á indagadores franceses; en estos estudios, descúbreñse faces y fragmentos de marcado valor en cuanto pueden servir á la educación sexual y moral, á la higiene transmitida "en" la escuela y "por" la escuela. No podemos ahora detenernos á indicarlos.

3. Precisar una clase particular de "Depoblación," por mortalidad infantil excesiva, aún con índices de natalidad regulares y hasta altos, y su correctivo natural: la salubricación material y la instrucción sanitaria, por la escuela principalmente.

Al lado de la forma ó clase, sobradamente conocida hoy, de "Depoblación" que aflige á muchos grandes países, debe, por lógica contraposición, examinarse una otra forma, no bien estudiada hasta aquí. Nos referimos á la depoblación relativa, circunscrita casi siempre, accidental, ó mas ó menos duradera, pero no como aquella progresivamente persistente, que suelen sufrir, que sufren casi todos, los países nuevos ó importantes regiones de esos países, por insuficiencia sanitaria. Depoblación esta, "relativa" en modos destintos, acompañada en veces de una alta cifra de natalidad y cuyo origen directo hállase en la elevada proporción de mortalidad, por enfermedades evitables, predominantemente, mortalidad infantil, sobre todo.

En todo el territorio Argentino realízanse actualmente trabajos de saneamiento material y de instrucción sanitaria. Ellos estan sujetos á un plan trazado por la alta Dependencia nacional de Higiene Pública, y se realizan actualmente bajo la dirección del Jefe de esta, ya nombrado Dr. José Penna. Dentro del indicado plan, una parte considerable de labor corresponde naturalmente á la sanidad escolar é infantil en general y se cumple bajo la inmediata dirección del autor de las presentes notas.

Es en el curso de las indagaciones emprendidas con tal fin que se ha podido verificar la existencia de esos puntos, de esas zonas de relativa depoblación á que aludimos. Son en general zonas alegadas del litoral, de escasa inmigración, carentes hasta ahora de medios sanitarios, bien que poseyendo abundantes recusos naturales, y buenas características de clima.

Con la posesión, desde ahora, de computos estadísticos precisos, podrá penetrarse en el estudio intimo de las condiciones y causas locales, para hacerlas desaparecer.

Las estadísticas presentadas al mundo científico por el Dr. Penna

muestran desde luego, de modo general, en armonía con la observada en otras partes, la preponderancia del elemento infantil en los cuadros de morbilidad y mortalidad. Pero manifiestan, además, que ese predominio llega en ocasiones á ultrapasar niveles ordinarios. Así, por ejemplo, en una Provincia, San Juan, la mortalidad en los dos primeros años de la vida, llega á ser más del 48% de la mortalidad general y más del 81% de la infantil en común. Y si en vez de la Provincia toda, consideramos solo, fracciones determinadas de ellas arribaremos sin duda á comprobaciones, de más definido carácter local y práctico.

La causa primera de estos efectos de depoblación, radica, según habrase colegido, en las afecciones gastro-intestinales, producidas por defectuosa alimentación. Estas afecciones han determinado el 32.1% de los decesos por debajo de dos años. Cerca del tercio de las vidas perdidas en este termino (en total: 47.855), eran pues imputables á la inobservancia de los simples preceptos de fisiología digestiva. Y, si se agrega que la subsistencia del otro gran grupo de causales determinantes de letalidad infantil, el constituido por las afecciones infecciosas "evitables", depende de aplicaciones profilácticas relativamente sencillas, se concibirá cual puede ser el beneficio de vidas, la cosecha puerícola de que hablamos más adelante.

En los Estados Unidos, no sabemos todavía en que grado preciso y en cuales regiones ó zonas, se cuenta con observaciones parecidas, con respecto á esta depoblación circunscrita y relativa por mortalidad infantil desmesurada. Su consideración debe ser hecha conjuntamente con otro fenómeno.

El descenso de la natalidad. Este descenso, cuya universalidad en los medios ultracivilizados, en diversos elementos sociales de la ciudad y la campaña, es un hecho bien adquirido hoy día, se manifestaría con pronunciados signos, no exentos de cierta gravedad, según la expresan higienistas, demógrafos y sociólogos americanos. Nos ha parecido de singular valía, al respecto, la exposición presentada por el propio Jefe de los Estadísticas en la Oficina del Censo de los Estados Unidos, Dr. Cressy L. Wilburn (Chief Statistician, Bureau of the Census), ante la "Association for Study and Prevention of Infant Mortality" en su sesión de apertura el año pasado, 1912.

4. Relacionar la exagerada mortalidad infantil y sus causas, la depoblación relativa ó absoluta y sus factores determinantes, con las acciones y obras de Protección á la infancia. Al fijar estas relaciones, conviene indiscutiblemente establecer diferencias entre colectividades y países. Pues condiciones diversas, exigen la consiguiente diversificación de medios.

Hay que tener en vista uno ú otro tipo de países, el de población

densa y de avanzada cultura, y el de población escasa y de civilización inicial ó nueva, bien que sean parecidos los objetivos é iguales los principios fundamentales que guían la acción en unos y otros. Pero, sea cualquiera la colectividad social de que se trate, débese insistir sobre la conveniencia, la necesidad de redoblar los esfuerzos, de intensificar las actividades conducentes á la instrucción de servicios, á la fundación de laboratorios y centros técnicos, á la creación de instituciones y obras capaces de llenar las múltiples indicaciones que sugiere la protección de la infancia. Las sociedades necesitan hoy llenar del mejor modo posible el vasto programa de la higiene infantil y escolar.

En este punto sería oportuno desarrollar, lo que no podemos por cierto hacer ahora, un concepto que asoma recién puede decirse, que los estudios biológico, sociales van deponiendo: el de la valía de esta unidad demográfica que es el niño nacido en el país, comparativamente á otras unidades. Grande es, sin duda la importancia práctica de la cuestión en orden á las aplicaciones puerícolas; como es también elevado su alcance en lo sociológico, en lo "eugénico."

De singular manera si se trata de países de mucha inmigración y en que la natalidad ofrece tendencias á decrecer. El niño entonces, nacido en el medio, viene á ser fruto de una adaptación ya realizada; su vida hállase valorizada por elementos que no poseen las unidades inmigradas.

Tal es el caso de la Union Americana. En los Estados Unidos, piensa el Dr. Wilbur ya citado, no ha dádose todavía la debida significación al descenso de la natalidad.

La cepa americana daría hoy muchos menos vástagos, las viejas familias, mas ó menos voluntariamente, perderían su fertilidad de antes. "The old American stock has ceased to be prolific, at least in the Northern States," sienta el Dr. Wilbur en situaciones así, añadimos nosotros realízase el poder de acción de la Sanidad infantil. En situaciones parecidas, si hay un conjunto de conocimientos y de prácticas, capaz de llenar en parte al menos, los "desiderata," ese conjunto es la moderna Puericultura. (En la amplitud que al termino asignamos en este trabajo.) A la penetración de estas ideas, débese en buena parte, no hay duda, el fuerte impulso que mas arriba señalabamos, de los trabajos americanos en defensa del niño. (Con mayores elementos de los que hoy poseemos, en el respecto tratado, habremos de intentar una aproximación que nos seduce entre los Estados Unidos y la República Argentina. Esta, en su fracción mayor, recorre hoy etapas y ofrece situaciones, que antes anduviera y presentara aquel gran país.)

5. Mostrar, en el campo biológico, sanitario, la fuerte vinculación, la coherencia lógica de todas las acciones defensivas del niño, de todas las obras pro-infancia:

De estas obras y acciones son unas propiamente "escolares;" otras son solamente "próximas á la escuela;" otras en fin son ajenas del todo á esta. Pero ajenas en apariencia unicamente; pues en verdad la *sanidad de la infancia* es una sola, y, en toda ella bajo cualquiera de sus aspectos emorfológicos, existen en grado diverso pero invariablement, elementos didáctico-pedagógicos.

Además existe como un campo de indagaciones y aplicaciones, intermedio ó comun, entre la pediatria clinica y profilactica, por una parte, y la higiene pedagógica por otra. Sería facil demostrarlo, especificando las obras y los nombres de sus creadores. Pero ello no es necesario. Bástenos indicar que ese campo intermedio se halla hoy en pleno cultivo; avanzando además la conveniencia de mostrar la co-relación lógica de las determinaciones, ya sea ante los principios científicos que las inspiran, ó ante los fines sociales á que tienden.

Impónese, pues, este objetivo que traduce una real necesidad: *co-ordinar todas las realizaciones pro-infancia, dando unidad a todos los actos administrativos y técnicos, legislativos y sociales.*

Con la Puericultura debería vincularse lo que empieza a designarse con las expresiones de "Homicultura" de "Viricultura;" y toda ello, con la cultura sanitaria general. La higiene del niño, en todas las edades y condiciones, en todas los medios, constituye un solo cuerpo de ciencia, un solo organismo técnico. Por consiguiente, los centros que deban realizarla en sus modos diversas, habrán de hallarse orgánica y funcionalmente unidos. Como información de interés, haremos presente que la organización administrativa y técnica de la higiene en la República Argentina consulta esa unidad y tiende á ella. Es una de sus características. Denótala este hecho que hemos exhibido y explicado ante la asamblea: la implantación del servicio estadístico-demográfico, llevado á cabo por el Dr. Penna desde la presidencia del Departamento Nacional de Higiene. Dicho servicio, de orden fundamental, está establecido en todo el territorio geográfico y político de la nación, bajo pié de unidad é intima correlación en materia sanitaria. (Con la efectuación, que no tardará, del nuevo censo de población de la república, las operaciones estadísticas adquirirán la firmeza y precisión deseables, y las indagaciones demográficas su punto de apoyo indispensable.)

6. Sostener las dos opuestas direcciones: Centralización y des-centralización como igualmente necesarias al desarrollo progresivo de estas instituciones:

En el concepto moderno, los labores de protección de la primera edad son en mucha parte de la incumbencia del gobierno. Han menester de presteza, de clara previsión, de uniformidad: deben así, hallarse

sujetas á una dirección central. Mas por otra parte, habrán ellas de ejercitarse en los nucleos mismos de población que las requieran: de otra manera, descentralizarse.

Doble juego, este, indispensable al avance institucional; con frecuencia, sin embargo, mal comprendido. En materia de sanidad infantil y pedagogica, como de sanidad general, al propio tiempo que se facilite la indispensable creación y multiplicación de fundaciones, se irá con firmeza, progresivamente, hasta la uniformización, por central impulso, de los servicios; procesos ambos, como dejamos dicho, igualmente necesarios.

7. Reparar en la variedad de formas que las obras médico-pedagógicas y de sanidad infantil afectan, inquirendo la razón de ser de las variaciones:

Por mucha que sea—y es—la variedad de formas con que hoy se nos manifiestan esas obras, aquí y allá en las distintas colectividades, cabe presentir una diversidad mayor en un futuro cercano. Ello se explica naturalmente por la complejidad que de suyo tienen los factores, administrativo-tecnicos y sociales. Las informaciones suministradas en los ultimos congresos internacionales bastan á dar idea de esa rica “morfología.” Son de evidencia, por lo mismo, las ventajas que reportaría una clasificación de las fundaciones actuales. Estas fundaciones, con sus fines y sus actividades funcionales (pues la clasificación no debiera ser tan solo, morfológica) serían logicamente repartidas en grupos, con indicación concreta de aquellas que puedan serles asignada una significación especifica; de las fundaciones, tipo.

8. Incitar á que se emprendan estudios comparativos.

Desde luego, entre ciudades, centros ó grandes colectividades que se encuentran en parecido nivel de evolución. Y, además, por otras razones, entre sociedades apartadas, cualquiera sean ellas, siempre que de su aproximación pueda desprenderse indicaciones utiles.

9. Reconocer á la sanidad infantil, por manera integral, una faz pedagogica, es decir, todo un aspecto en relación con la enseñanza:

Las acciones y realizaciones que protegen la vida del niño, es obvio, necesitan propagarse en todas las capas sociales. El hoy vasto conjunto de conocimientos que á esa misma vida se refieren, precisa cultivarse, difundirse, perfeccionarse. Deben, entonces, unos y otros conocimientos y actos, enseñarse regularmente.

La puericultura, sea que se le considere en estrecho sentido, á la manera de J. Bertillon y un poco á la manera de Pinard mismo, como los simples cuidados materiales que reclama el cuerpo del niño (Bertillon por ejemplo, emplea la expresión “Puericultura aséptica,” como

diciendo "The aseptic rearing of Children," sea que se la conciba, como un vasto complejo de nociones y de hechos, ligado á conceptos etnico, sociales y eugénicos de mucho alcance, la puericultura, decíamos, precisa constituirse en materia y objeto de la publica instrucción.

La instrucción puericola no está bien definida en sus elementos componentes y en su método; es sumamente delicada, por cuanto requiere en quienes deban darla, preparacion y dotes no comunes. Ella, la instrucción, ha de ser parcial y diversificada, con adaptación á las condiciones de grupos escolares determinados. Pero, completa, integrada, eso sí, en el sentido de que un sistema pedagógico bien ordenado debe poseerla en todos sus grados y modos. Desde las nociones más simples de maternología é higiene alimental incluidas en el "curriculum" de las escuelas elementales y profesionales de niñas, hasta los cursos de Puericultura intensiva, eugénica de las altas escuelas medicales, y de defensa y protección general y legal de las escuelas de derecho y de estudios sociales.

10. En la república Argentina. Instituciones y obras; trabajos é iniciativas.

En la república Argentina, la proteccion á la infancia y la Puericultura, como enseñanza y como acción administrativa y social, va penetrando en el espíritu de muchos. Si ellas no son, para los poderes publicos un objetivo central, de todos los días, constituyen la materia de iniciativas importantes. Y, en el dominio abiertamente social, también, son objeto de voliciones cada vez más esclarecidas. Presiéntese, pues, sin esfuerzo el franco desenvolvimiento á que están destinadas.

Nótase, es verdad, incoherencia en las actividades creadoras, falta de orden, de regularidad funcional, en perjuicio casi siempre de la higiene. Las iniciativas suelen repetirse, muchas veces sin objeto; los esfuerzos oponerse y centralizarse; las energías útiles disiparse en pura pérdida. Pero, bien mirados, tales inconvenientes se notan en todas partes. Se atraviesa, en punto á sanidad infantil, un periodo en que la oposición y un poco la confusión de ideas explican y en que no puede menos de reinar cierta inconexión en lo tocante á realizaciones practicas.

Era nuestro intento ofrecer aquí substancialmente datos y referencias acerca de las instituciones argentinas mas directamente relacionadas con la sanidad de la infancia y la Puericultura (realizada y enseñada), así como á los centros técnicos, á los órganos administrativos que les conciernen. Al presentar las especificaciones descriptivas, pensabamos hacerlo sobre base de una clasificación-provisoria, mas conteniendo elementos acaso duraderos, en que se tomen en cuenta, por una parte "caracteres" y "fines" de las creaciones, y por otra la "situación" de las mismas (federal, estado provincial, municipal, abiertamente social).

Desgraciadamente, razones de espacio nos lo vedan. (Nos contentaremos con avanzar que esta labor de clasificación está efectuandose desde ha tiempo. Las principales dependencias tecnicas oficiales y alrededor de ochenta asociaciones y fundaciones diversas realizando fines de sanidad infantil, hállanse al presente comprendidas en los cuadros que el autor prepara de acuerdo con las instrucciones del presidente del Departamento Nacional de Higiene, Dr. José Penna. Los resultados de dicha labor seran hechos conocer en poco más, en la seguridad de que interesarán, aun fuera del país).

Así, nos limitaremos á señalar, sin calificación ni orden estrictos, los "centros técnicos" y los "núcleos" de fundaciones más importantes; núcleos á cuya rededor actíbase el movimiento:

(a) Departamento Nacional de Higiene. Una division está enteramente consagrada á la sanidad infantil bajo los tres aspectos: Higiene escolar y pedagógica; higiene industrial; higiene infantil común (Primera infancia, obra de-) El departamento de higiene ejercita hasta ahora, sobre las instituciones privadas ó de gobierno una acción de vigilancia y corrección. Empieza á efectuar actos de creación, sobre todo en los territorios federales, allí donde los poderes que administran deben crearlo todo en cierto dominio. Es el Departamento sanitario argentino, que llena desde varios aspectos funciones análogas á las que cumpla "The Health Department" en los Estados Unidos, y desde otras más bien, la de la institucion federal. The Public Health Service of the U.S.;

(b) Asistencia Publica y Administración sanitaria de la ciudad de Buenos Aires. Esta institución de caracter comunal, amplia y bien dotada, muy avanzada en sus innovaciones, tiene en ejecución unas en vistas otras, diversas instituciones de puericultura y de protección á la infancia. Asimismo, ha emprendido la revisión y la adopción de medidas con el fin de obtener la leche pura. El Director de la repartición, Dr. Horacio G. Piñero elabora al presente un plan de realizaciones pro-infancia. En el estarán representadas, á la altura de las mejores experiencias europeas, las "Gotas de leche," "Dispensarios" y "Consultas" para niños de pecho; hospitales y salas infantiles, etc., de todo lo cual ya existen fundaciones;

(c) Consejo de Higiene y Administración sanitaria de la Provincia de Buenos Aires. Instituciones relativamente adelantadas de la clase de las que acaban de mencionarse, en La Plata y en seis ciudades más (centros seccionales).

(d) Fundaciones provinciales: en Santa Fé, Tucuman, Córdoba, Entre Rios, etc. Varias, en estado incipiente.

(e) Comisión nacional de Asilos y Hospitales; haciendo parte de

la rama administrativa de la Beneficencia pública (Ministerio de Relaciones Exteriores). Entre las fundaciones acometidas por la comisión, las hay que guardan conexión con la infancia;

(f) La Sociedad de Beneficencia y sus fundaciones puerículas, Antigua y poderosa organización, ampliamente protegida por los poderes públicos que tiene á su cargo numerosos establecimientos de población infantil.

(g) El Patronato de la Infancia. Rica, influyente institución social que está desplegando actividades creadoras que mucho prometen. Su orientación es moderna, vale decir, científica.

(h) Fundaciones promovidas y sostenidas por el elemento extranjero: Este contribuye en grado importante á hacer surgir y mantener establecimientos (franceses, italianos, ingleses, españoles, alemanes, americanos) infantiles, en muchos de los cuales prima el propósito sanitario;

(i) Las sociedades y ligas de Profilaxis. Su acción cuando no se manifiesta de modo activo, por directas, ó no directas promociones y creaciones, se muestra en lo pasivo, impidiendo, limitando. Destácanse por sus impulsiones en el rumbo respectivo, la "Sociedad de Higiene Pública" y la "Liga contra Tuberculosis" que dirigiera á esta altura el Dr. Coni y hoy el Profesor Araoz Alfaro;

(j) Asociaciones varias; patronatos. Fuera de lo especificado en anteriores líneas, quedan todavía gran número de Asociaciones que dirigen sus miras á la maternidad, y á la infancia. Entre ellas, las hay de muy esclarecida acción, como que saben aleccionarse en sana experiencia y escogitar los mejores procedimientos. Merecen particular referencia las agrupaciones que ejercitan el patronato del Niño débil, fundan colonias transitorias ó permanentes, y están implantando un régimen de cultura y vida, al "Aire libre," adelantadísimo.

(No hacemos mención aquí de las impulsiones educativas señalados en pasajes diversos).

II. La sanidad infantil y el movimiento demográfico de la república argentina:

Restanos ahora satisfacer al principal propósito de esta contribución: cual es, relacionar la sanidad infantil con los valeros estadísticos que á ella se refieren; y por estos, con el movimiento demográfico del país. En lo anterior ha sido por varias veces incidentalmente rozada esa faz de la cuestión; la abordamos aquí abiertamente.

Los estados provinciales y las circunscripciones federales que en junto forman la república Argentina, han ido instituyendo los servicios

de inscripción y registro de los nacimientos, y de los decesos y de los hechos demográficos esenciales. Faltaba coligar las distintas operaciones parciales y computar y totalizar resultados. Es lo que ha realizado el Dr. Penna, por medio de la Oficina Demográfica del Departamento Nacional de Higiene.

Mediante esas operaciones estadísticas, inténtase caracterizar al través de los grandes procesos demográficos, la situación con respecto á la sanidad general y con respecto á la sanidad infantil. En seguida, por vías lógicas, se procura inducir el fin máximo de las actividades técnicas que corresponden á los dominios de la higiene general y especial. De otra manera expresada: infiérese, mediante determinados procedimientos todo el beneficio, medido por el ahorro en salud y en vidas, á que pueda aspirarse poniendo en juego los esfuerzos sabiamente combinados de higienistas puericultores y medicos pedagogistas. O lo que es igual, en fin: determinan los guarismos-límites, entre los cuales graduariase los "efectos" ó "resultados" sanitarios, entre los cuales estimaríase la posible, la realizable cosecha de vidas," cosecha puerícola," si se nos permite la expresión.

Precindese en este resumen, de examinar los procedimientos seguidos, ó que deben seguirse, para el analisis y cálculos estadísticos: para determinar las "medias" en la mortalidad y en la natalidad general, en la mortalidad común y en la infantil, según edades; para estimar en el total de los decesos, la proporción correspondiente á enfermedades evitables, en la infancia y en los otros periodos de la vida; y, en fin, para desprender con la maxima precisión posible sobre las estimaciones anteriores, los guarismos que representen el margen de beneficios posibles para la sanidad, y, más limitadamente, la "Cosecha del puericultor", á que más arriba se hace referencia;

Las cifras estadísticas que reflejan el movimiento demográfico en la república Argentina (se ha tomado como base las correspondientes al año 1911, las primeras en completarse é interpretarse, y que nos han suministrado á la vez el fundamento y los primeros materiales de la presente comunicación, no han sido hasta aquí hechos conocer de los hombres de estudio y especialistas. No han sido aún publicadas.

Justamente, en el momento actual, están imprimiéndose en una publicación intitulada: Anuario Demográfico de la República Argentina.

La obtención y la compulsa metódica de los datos estadístico, demográficos que contendrá, son obra, como ya está dicho, de la más alta repartición sanitaria argentina. Su presidente el Dr. José Penna—venciendo las dificultades de distinto orden que venian obstando á la consecución y ordenamiento de tales datos tomados de fuente fidedigna, y completos al mismo tiempo, esto es, refiriéndose á todo el país, sin excluir circumscripción alguna, geográfica ó política, ha logrado obten-

erlos directamente de la mejor procedencia: las Oficinas de Registro Civil y Estadística de los respectivos estados provinciales. Y reunidos, compulsados comparativamente é interpretados estos datos originales puédesse iniciar al fin la serie de publicaciones que reflejeran, de acuerdo con criterio y metodo los mas avanzados, el *movimiento demográfico* del país.

De estas delicadas operaciones ha sido encargada la Oficina de Demografía, de reciente creación, confiada á la competencia de la Dra Adela Zauchinger.

Deploramos no poder detenernos un poco en el análisis, directo, comparativo y crítico de esos resultados estadísticos, de los relativos, sobre todo á estos procesos demográficos fundamentales; natalidad y mortalidad, general é infantil. Pero si nos permitimos enunciar, tan solamente (tomandolos de la referida publicacion del Dr. Penna) los valores directos y proporcionales que representan para todo el país estos cuatro procesos: Natalidad; mortalidad general; morte-natalidad; y mortalidad infantil. Y con esa simple enunciación, la determinación del puesto, del orden de colocación del país, como entidad demográfica, con relación á otros países (19 países, europeos la mayor parte). Débese advertir que hallándose proxima la Argentina á verificar el censo regular de su población, esta ha sido solamente calculada.

La cifra que ha sido aceptada como base de cálculo, cifra probablemente inferior á la real, es de 6.612.816.

En orden á natalidad, la cifra anual para todo el país (1911) está representada por 262.317 nacimientos; y por la proporción por 1000: 39.3 (La Argentina ocuparía el 3er sitio después de Rusia y Rumania).

La morti-natalidad (cifra global): 9049. Proporción 3.44 niños nacidos muertos por cada 100 niños nacidos. (La Argentina ocuparía al respecto un sitio mediano, mas favorable que el Japón, Bélgica, Francia, Holanda, Suiza y Suecia.)

Mortalidad general: 125.727; proporción: 18.9 por 1000 (proporción cercana á la de Alemania, superior á la de Francia, Italia, España, Rusia, Rumania; inferior á Bélgica, Inglaterra, Holanda, Suiza, y Suecia.)

Mortalidad Infantil. De la primera infancia particularmente. Esta ultima fué (siempre por el año 1911) de 47.855 niños fallecidos entre 0 y 2 años, representando el 78.6% de la mortalidad infantil y el 38.24% de la mortalidad general. Punto importante: en algunas regiones del país, la mortalidad en la primera infancia alcanza tan elevada proporción que llega á ser la mitad en la mortalidad total.

Una cantidad, total á la vez que relativa, de la mayor significación en estas estadísticas, es la que marca la diferencia entre las adquisiciones y las pérdidas, entre los nacimientos y las defunciones. Siempre del año estudiado, 1911, esta diferencia, favorable, esto es, señalando

un excedente de nacimientos, es de : 136.590. A 100 nacimientos han correspondido 47.70 defunciones; el excedente natal ha importado, pues 52.30%

12. Resultados de la acción sanitaria. La cosecha puerícola: 12.000 vidas en la Argentina: Justamente, es la proporción que acabamos de presentar y aquel excedente, por consecuencia, lo que es susceptible de acentuarse, tomándose la diferencia mucho más favorable. Y ella no tanto, se comprende, por la obtención de una más alta natalidad, bien que eso mismo sea factible en cierto grado por medidas indirectas. Pero si por la disminución franca, constante y general de la mortalidad, de la infantil sobre todo, de la mortalidad en la primera infancia. Hacia aquí es que deben converger las determinaciones sanitarias, las obras y labores de la higiene infantil, y pedagógica, la instrucción maternológica, las instituciones y fundaciones sociales y la acción legislativa. ¿Como medir hoy día, en el estado actual del conocimiento científico, la amplitud practicamente posible de esos resultados sanitarios?. Es posible determinar con mediana precisión y en concreto, para una cierta colectividad, para un país dado, el margen ofrecido en junto por las técnicas de la Higiene publica?. Como apreciar de antemano lo que hemos llamado, empleando un termino expresivo, la cosecha puerícola?.

No podríamos dar aquí una solución á estas cuestiones de interés, explicándola suficientemente. Pero, en cuanto hace á nuestro país, nos limitaremos á hacer constar la cifra que en nuestra estimación correspondería al concepto encerrado en la última de estas cuestiones. La cantidad que expresa la "cosecha" posible, realizable por la suma de acciones sanitario-sociales de que venimos ocupándonos, puede ser apreciada en 12.000 unidades para la república Argentina. (En otro estudio hemos de comparar esta estimación con otros, relativos á distintos países; muy particularmente, con la hecha para los Estados Unidos por Mr. Nathan Strauss (de 125.000 en 1911). Doce mil vidas conservables cada año; el anunciado con su simplicidad elocuente, es todo un programa. Programa á la vez científico y social; de pensamiento y de acción.

13. Indicaciones para la república Argentina. Plan de trabajos. Las indicaciones que para ser aplicadas á la situacion presente del país, en todos los ordenes, hemos ya formulado, con el designio de continuar más tarde su estudio, derivan naturalmente de lo que dejamos expresado. No las detallaremos aquí. Bastenos decir que, por una parte, ellas aprovecharían en lo posible de la experiencia común, incluyendo las realizaciones más avanzadas; y por otra que abarcarán, integradas, las faces distintas de la compleja cuestión.

Somos de lo que piensan que se ha menester si se aspira á realizar obra fecunda, de un plan de trabajos previo y susceptible de mejoramientos sucesivos. En consecuencia, estamos decididos, á trabajar en él, sobre todo en las secciones donde nuestro modesto esfuerzo personal pueda aportar contingente util. Porque en verdad, un plan así que tienda á ser "actual" y "completo," habrá de contener elementos de labor y de conocimiento tan variado que sea indefectible recurrir á la acción y competencia de muchos. He aquí las facetas y los rumbos de indicación que, combinados deberá abarcar:—Administrativo-técnico;—estadístico-demográfico;—legislativo, acción legal;—fundaciones médicas, médico-pedagógicas; fundaciones preventivas y sociales. Faz didáctica y escolar. Pero, facetas y rumbos, repetimos, que se combinan de tan diverso modo, que la calificación ha de reducirse á indicar predominio.

La alta faz anotada, didáctica y escolar, nos invita á un esclarecimiento, respecto á su amplitud. Ella no debe solamente comprender las conocidas nociones de "Maternología" y de "Puericultura," cuya transmisión á las jóvenes que se firman en las escuelas de segunda y especial enseñanza se impone de suerte que no es necesario una insistencia, sino diversas enseñanzas, diversificadas y elevadas en creciente gradación. En el grado más alto se situarán los Cursos de Sanidad Infantil y Puericultura de las facultades de Medicinas (cátedras por cuya creación débese insistir), así como los cursos que especialmente se constituyan para otras facultades y escuelas universitarias: derecho, filosofía, estudios biológicos y sociales.

Inmediatamente al lado de estas innovaciones de orden escolar y didáctico, se colocará esta creación hoy indispensable: de un instituto central de Puericultura. Se seguirá para ello, hoy por hoy, estos dos grandes modelos: el instituto francés de "Porchefontaine" y el alemán "Emperatriz Augusta" de Charlottenburgo. Es en esas dos instituciones superiores que al presente se transmite, sin duda alguna, la instrucción más eficaz y científica, más alta también, en cuanto á medicina, sanidad y preservación de la infancia.

La prescripción es clara por lo que atañe al interés argentino. La hemos sostenido y la sostendremos con decisión: Tomar de cada uno de esos institutos los elementos superiores, adicionar otros que hoy pueden preverse y realizar así, adoptada á las condiciones de ambiente, la institución propia.

14. La Puericultura: amplitud de su concepto. La puericultura nacional: Su organización.

Al termino "Puericultura" dase comunmente un sentido harto restringido, del que, naturalmente participan los conocimientos que el

cubre á esa voz precisa dársele un concepto mas amplio que el ordinario, con inclusión de los siguientes enunciadados títulos: Cuidados á la madre, al recién nacido y al niño en las primeras edades; formación y evolución del niño; profilaxis; enseñanza; protección legal y administrativa; obras é instituciones diversas de difícil clasificación. Con estos conocimientos vincúlense naturalmente conceptos de un orden superior: demográficos, biológicos, eugénicos, evolutivo, sociales y aún políticos.

De acuerdo con estos conceptos y en la mira de ciertos fines, hay una Puericultura nacional. Conviene dar, debe darse á la protección fisiológica y sanitaria de la infancia, una orientación propiamente nacional. A ella correspóndele la formación en numero y en calidades constitutivas, la formación integral, del ser humano en tierna edad,—y en mucha parte la formación del hombre. Está pues llamada á influir poderosamente en la constitución y fuerza colectiva.

La Puericultura nacional, entendida así y es preciso empeñarse en que la nueva concepción prevalesca, representa más noble y previsora manifestación social, una primordial función de gobierno.

Voto-Proposición. Ahora, después de estos fundamentos, nos permitimos someter un: *voto* del congreso, reconociendo la importancia en el momento actual de los estudios de conjunto, que, por una parte, muestren las instituciones, labores y obras de higiene escolar y pedagógica, de higiene infantil y de puericultura, y sus fundaciones técnicas respectivas; y por otra, reflejen á través de las estadísticas, á la luz del movimiento demográfico general, la importancia real en hechos y en cifras de los problemas de sanidad infantil y el alcance efectivo de sus soluciones; un *voto* por que á las reuniones próximas del congreso Internacional de Higiene Escolar, sean aportadas contribuciones de esa índole que permitan estimaciones directas y comparativas de sumo interés hoy en día; y

Una Proposición conducente á que se incluyan estas cuestiones, esta cuestion general, entre las que deben ser objeto de un relatorio (rapport) oficial en la próxima reunión del Congreso.

(En lo que la república Argentina concierne, su principal dependencia sanitaria, el Departamento Nacional de Higiene, que decidiera suministrar por nuestro intermedio, los datos y elementos de distinto orden dados á conocer en la presente sesión, comprométese espontáneamente á completar sus investigaciones, co-ordinándolas, metodizándolas y de someterlas á la ilustrada consideracion del V. Congreso.

NOTA:—El “Congreso del Niño.” Breve información acerca de una iniciativa Argentina:

De un tiempo á esta parte, los estudios sobre la infancia, empren-

didos y realizados con amplitud de vistas y un concepto de los objetivos sociales y científicos, más alto que los ordinarios, empiezan á no ser raros. Así, al lado de numerosas contribuciones de detalle, de indole experimental ó practica, ó de finalidad técnica, aparecen aquí y allá otras, de miras más vastas y constitución más filosofica, por así decir. Son estas ultimas, no hay que decirlo, tanto ó más utiles que las anteriores, á las cuales suele inspirar, señalándolas normas y direcciones. Y no solamente estudios, indagaciones de tal indole aparecen; sino también instituciones creadas, obra efectivas, en las cuales, la tendencia natural á la especialidad, se neutraliza un tanto, armonizando con la contraria, hacia la co-ordinación y la unidad. Los grandes institutos de Puericultura ("Porchefontaine en Francia; Emperatriz Augusta en Charlottenburgo, Alemania, v.gr:), que hacen obra fisiológica, obra social y realizan á la vez elemental y alta enseñanza; las novísimas instituciones de "Paidologia," de Ciencias del Niño (como ser las con tanto talento planeadas por Claparede, de Ginebra y Joteyko, de Bruse, las), y cincuenta concepciones más realizadas ya ó en vías de serlo, en Alemania, Francia, Estados Unidos, Italia, con muestra elocuente del nuevo espíritu:

A esa orden de iniciativas pretenece la que concebida y fundada por el autor de la presente contribución, tuvo la fortuna de ser apoyada por numerosa é importante Asamblea sabia, cual fué el Congreso Científico de Buenos Aires, de ser hecha suya por la Asociación de estudios más antigua y calificada de la república Argentina: la "Sociedad Científica." Nos referimos al Congreso del Niño.

En esta Asamblea Internacional, cuya celebración está resuelta para 1916, que ya antes de realizarse está dando origen á tentativas é impulsiones de no escasa significación, seran tratados á un tiempo mismo y bajo un plan lógico, definidamente actual, y avanzadamente filosófico, todas las indagaciones y creaciones, las obras, labores y fundaciones relativas al Niño; y tendiendo á su estudio científico; á su protección sanitaria; á su instrucción y formación profesional; á su protección legal y social.

Es esta concepción á la que no faltan aspectos originales, es este plan, entrañando la convergencia de ciencias y de técnicas hacia el Niño y la infancia, núcleo y eje de cualquiera de las formaciones sociales presentidas, anheladas, que ante todo y prescindiendo del éxito que haya de tener el concurso, nos ha parecido digna se ser siquiera someramente presentada á conocimiento de la muy ilustrada Asamblea de Buffalo.

Antes de mucho, se hará llegar á sus miembros una información más nutrida.

INFANTILE HYGIENE, PUERICULTURE AND THE DEMOGRAPHIC MOVEMENT OF THE ARGENTINE REPUBLIC

Demographic and Sanitary Statistics of the Argentine Republic as Presented by Dr. José Penna. A General Plan of Instruction and the Work of the National Puericulture

BY

ANTONIO VIDAL

A very brief statement of the principal problem relating to the infantile hygiene, inclusive school hygiene, its pedagogic value, and the so-called Puericulture. The actual scientific view, indicating the effective work required by infantile hygiene, and its relationship to the demographic movement of the various countries, with special reference however to the science of childhood, and the demographic movement of the Argentine Republic.

The demographic movement will be more fully appreciated by the statistics which are about to be published by the authority of the National Department of Hygiene. Dr. José Penna, president of the said department, expressed his very special desire that we should bring some of the facts and figures before this Congress. As a matter of fact, Dr. Penna thought that the Argentine Republic would be well represented by presenting these demographic statistics, a real sign of sanitary culture.

It is obvious that without a correct register of the population, correct figures of the loss of lives, a real "bookkeeping" of the population, no scientific hygiene can be conceived. In an abbreviated form we beg to present the principal features of this work, with some concrete information, and some necessary data.

It would, of course, be impossible to analyze in all its details all the leading factors; it is our object, however, to give a general idea of the most up-to-date issues.

I. To report the principal aspects and the leading features of the modern idea, and the intense activities manifested to-day, and which no doubt is called upon to bring about the highest efficiency in favor of childhood. The nursing and the development of the child (The Puericulture), the prophylactic defense in all the ages, the individual condition, the education in hygienic centres, based upon physiological methods, accepted as superior, and inspired by the intimate knowledge of the child, its various organic features, the psychology, through the

work of medical-pedagogics, and the various sanitary institutions. Proper protection of the child through infantile selection; laboratories for paidologic investigations, and so forth.

In all the countries of advanced evolution, impulsive manifestations pro-childhood are noted. But, in some of the European countries: France, Germany, Austria, Belgium, England, Italy and others, a higher standard is noticeable, shown by its superior scientific literature, and the very important papers presented at the last congresses in favor of childhood. Among these, the one of Berlin, 1911 (Kongress fuer Saenglingsschutz), Congree pour la Protection de l'Enfance du premier age (Gouttes du lait); Congress for the Study and Prevention of Infantile Mortality. But certain institutions such as the Porchefontaine, and the one in Charlottenburg, are much more eloquent, of what is done at the present time, and a splendid example of what can be done in the future to protect childhood. This movement is also manifested and of great importance in the United States through the action and work of such initiatives as the "Visiting Nurse Movement," the "Child's Welfare Work," the "Certified Milk Movement," the "Baby Farms," and a great number of associations, such as the "Milk and Baby Hygiene Associations" established in various cities—and above all the Association for the Study and Prevention of Infantile Mortality, to which we shall refer later.

2. To explain the object of this movement, the visible motives of the expansion of this work, and the vigorous development of these institutions. Referring to the defense of childhood, it will be convenient to examine its manifestations to-day, taking into consideration its high significance, the interesting and complicated phenomenon of social demography. It will therefore be of importance to bring forth some of the aspects having a direct connection with medical-hygiene, and the science of motherhood as related to the school.

In the very prominent works of Levasseur, Cheyoson, Molinari, Bertillon, Ad Coste, Tallquist, Jaubert, Pinard, Fournier, Maurel, Arsene, Dumont, Debury, de Selice, Garnier, Ract and others, and this only considering, for our purpose, the investigations made by French authorities, we find as a result features of remarkable value, which can be applied to the sexual and moral education of school hygiene.

It would be impossible, however, to enter into all the details of the various investigations, the above authorities have been quoted as a valuable reference.

Besides the various classifications and forms of depopulation, well known to-day and affecting several great nations, it will be necessary to investigate some of the principal features. We shall refer more

especially to the relative depopulation, circumscribed, and nearly always accidental, of more or less duration, not as the progressive, and persistent depopulation suffered by nearly all the new countries, due to lack of sanitation. This class of depopulation or devastation is relative and distinct, often accompanied by a high birth rate, its origin being directly proportional to its death rate. (Due to evitable deceases, predominating in the death rate of children.)

3. To determine a special class of depopulation, due to excessive infantile mortality. Material salubrification and sanitary education, principally in the schools. Besides the "Depopulation" of grave concern to some of the most important nations, due to causes which are well known, it will be necessary to examine the relative depopulation, nearly always circumscribed, more or less durable, but not progressive and persistent, as in some of the new countries, due to the lack of proper sanitation referred to before.

This relative depopulation is sometimes connected with a high birth rate, having notwithstanding a very high death rate, due to evitable deceases, principally infantile mortality.

At the present time, and throughout the Argentine Republic, proper sanitation is effected, also sanitary education, through a general plan drawn by the National Department of Hygiene, and under the supervision of Dr. José Penna. Within the above plan considerable work is done through the department of school and infantile hygiene, under the direct supervision of the author of this contribution.

During the various investigations, it has been possible to establish the existence of "zones" having a relative depopulation, and as a rule these "zones" are situated at some distance from the coast, short of immigration, and lacking proper and adequate means for sanitation, notwithstanding the fact that the natural resources are abundant and the climate being superior to other parts of the country.

With the intimate knowledge of the local causes, and correct statistics, it will be possible to reduce, at least somewhat, this relative depopulation. The statistics presented by Dr. Penna to the scientific world are conclusive in a general way, and are harmonizing with those elsewhere, with a preponderance of the infantile element as shown in the figures of morbidity and mortality. For instance in the Province of San Juan (Argentine Republic), the infantile mortality, children between 0 and 2 years of age, has reached 48% of the general mortality, and more than 81% of the infantile mortality in general. And if considering fractions instead of the whole province we would derive at more practical results as to the local characteristics. This depopulation is greatly due to gastro-intestinal diseases, produced by defective nourish-

ment, having established a death rate of 32% under two years of age, and about one-third of the lives lost (a total of 47.855), only due to lack of physiological digestion. Taking into consideration these evitable infective diseases, it is obvious a great "crop" of lives could be obtained through the application of a relative simple prophylaxis.

As to the United States, we do not know as yet, the importance of this circumscribed and relative depopulation, due to excessive infantile mortality. It must be considered with other phenomenon to which we will refer later.

The decrease is universal in some of the ultra-civilized sections (both in the cities and the country), and of great and grave concern as expressed by some of the American hygienists. In this respect the report presented by Dr. Cresey L. Wilbur, Chief Statistician of the Bureau of the Census, to the Association for the Study and Prevention of Infant Mortality in 1912, is of very special importance.

4. To relate the exaggerated infantile mortality, and its causes, the relative and absolute depopulation, and its chief factors, with the action and work done for the protection of childhood. In so doing the distinct type of the various countries must be considered. Those having a dense population, of high culture, and those having an inferior or smaller population, with an initial or new civilization, notwithstanding the fact that both types may have the very same purpose and same fundamental principles, but often some of the secondary features are apparently divergent, and sometimes directly opposed to each other.

To insist upon the necessity to increase the effort, to intensify the activities guiding the establishment of services. The foundation of laboratories and other technical centres, create institutions in general, able to comply with the various, and most important suggestions connected with the protection of the childhood, in order to materialize the vast program of school hygiene.

According to Dr. C. L. Wilbur, in the United States, due importance has not been given to the decrease of the birth rate; as he puts it: "The old American stock has ceased to be prolific, at least in the Northern States." Dr. Wilbur, as we understand it, feels that the power of the Infantile Sanitation or Hygiene, and has therefore indicated its importance. Under the circumstances a remedy can and must be found in modern "Puericulture." Of course the initiatives and impulses, as indicated in this work, are greatly due to the leading work in the United States in defense of the child. Notwithstanding the fact that the facilities are greater, the features of the Argentine Republic in this direction are similar to those of the United States.

5. To explain the natural coherence of all these works, and actions

in favor of the "Infancy," related more directly to the work and the actions of the schools. Notwithstanding the diversity of the various features thereto attached, in reality the infantile sanitation, or child hygiene, is one exclusive subject, and in all its morphologic aspects there are invariably various preceptive pedagogic elements. To explain the logical affinity of these works and actions, considering their scientific principles by which they are inspired, or in view of their social effects and tendencies. In view of these manifestations, however, the necessity to co-ordinate all the facts "Pro-Infancy," is obvious. Also to give a uniform "Unite" to all the administrative, technical, legislative and social acts. The so-called "Viriculture," should be united with the so-called "Homiculture" and both with "Puericulture," and all to the general culture of sanitation or hygiene.

The hygiene of the child in the various ages and conditions, constitutes one solid body of science, one technical organ. Therefore all the centres or institutions should be organically united. It may be of interest to know that in the Argentine Republic such is the case. In fact, it is one of the characteristics, and as already explained through this union of efforts, Dr. Penna was able to establish the statistic-demographic service. Said service of fundamental character has been established throughout the geographical and political divisions of the republic.

6. To sustain the two opposed directions—centralization and decentralization—as of equal necessity to the progressive development of these institutions. In the modern conception the protection of childhood is in the care of the government, and is therefore subject to a central direction, to be extended however to the other parts of the country, in a decentralized direction. The child or infantile hygiene (as well as the general hygiene), while facilitating the indispensable and progressive decentralization of the various institutions, they will be subject to firmness towards the unification and centralization of their services. This last feature being as important as the other. And all of this to be the scientific factor or instrument of the various investigations, having as basis the demographic or statistic values.

7. To indicate the variety and the complexity naturally attached to the administrative, technical, legislative, and social manifestations related to the centres of medical-pedagogics, and infantile sanitation. The morphology of these is so rich that it should not be necessary to explain the advantages of their classification. The institutions and the activities of their functions should logically be classified in groups at the time of establishing the Typical-Institutions (taken from this to that country where already established).

8. To emphasize the utility, to undertake comparative studies between cities and centres, among nations on the verge of development, and among those nations having relationship as to race and culture. For instance the Latin-American republics are forming one large family of nations, of which the Argentine Republic, Brazil, and Chile, and others are prominent members.

9. To acknowledge the pedagogic feature of infantile hygiene, as related to education and public instruction. The actions protecting the child are obvious, and it is necessary to disseminate these among the masses, through regular courses of instruction.

If, considering the importance of "Puericulture" as expressed by Bertillon, "The aseptic puericulture, the aseptic rearing of children, as related to the ethnical, social and eugenic development is, of course, a matter which must be made subject of public education.

The instruction must be classified, selected and adopted to the conditions of the various types or groups of schools, co-ordinated, and in a complete pedagogic form. From the very elementary notions of motherhood, to the higher courses of intensive puericulture at the higher medical schools, legal and social institutions of public education.

10. To offer in this connection data, facts and figures referring to the Argentine Republic in particular, where the protection of the child, and the development of "Puericulture" has taken firm root in the spirit of the masses, and have taken a practical form through administrative and social actions.

Data Covering the Centres and Administrative-Technical Organizations, Institutions and Works in the Argentine Republic, Having Direct Relations With the Infantile Hygiene With Puericulture.

(a) The National Department of Hygiene—the section in charge of the infantile hygiene—working connectedly with the section of school hygiene (a government department established in the city of Buenos Aires).

(b) The Public Health Administration of the city of Buenos Aires, the so-called "Asistencia Publica," various institutions established under the general term of puericulture, such as the so-called "Gotade Leche" (Gouttes du lait). Hospitals having special wards for children, medical offices established by the city government of Buenos Aires.

(c) The Council of Hygiene, and sanitary administration, of the province or state of Buenos Aires, with first-class, up-to-date institutions established in the city of La Plata and in others (in four principal centres of the state).

(d) A general Council of Hygiene for all provinces or states is now under formation.

(e) In various of the leading cities, the city governments have established city institutions, supervised by the municipality and its medical authorities.

(f) The National Committee of Asylums, Hospitals, Homes, forming part of the sanitary administration of the Ministry of Culture. Some of these institutions have a direct connection with the protection of childhood, but are working independently.

(g) The guardianship of children. A very rich and influential institution, modern, active and scientific.

(h) Institutions established and maintained by foreign elements: French, Italian, English, Spanish, German, American, Scandinavian, and a number of other nationalities. Many of these are exclusively devoted to children, having sanitation as a primary object.

(i) Various societies and leagues of Prophylaxis. Among the most important "The Society of Public Hygiene," the "League Against Tuberculosis" now directed by Professor Araoz Alfaro.

(j) Associations in general, of private nature, the majority of which have the program of maternity and childhood hygiene in view. For instance the important association "The Guardianship of Feeble Children" promoting "open-air institutions."

II. Infantile Hygiene, and the demographic movement in the Argentine Republic. In the various provinces or states, and the federal territories forming the republic, birth and death registries have been established, being classified, co-ordinated, and supervised by the Bureau of Demography of the National Department of Hygiene. Through the statistics and the various demographic processes, the general sanitary condition of the country will be established, and thereby the condition of infantile hygiene. In other words, to establish the effects and sanitary results of the puericulture crop of lives.

It will not be possible to enter into all the details as to the statistics in order to establish the "average" of the general death and birth rates, according to ages, evitable deceases and so forth. The year 1911 has been taken as basis to establish the demographic movement of the Argentine Republic, which is about to be published, entitled "The Demographic Year Book of the Argentine Republic." The figures and various informations have been compiled by the National Department of Hygiene under the direct supervision of Dr. Penna, and conducted by Dr. Adela Zauchinger.

The calculations have been based on a total population of 6,612,816. The birth rate in 1911, covering the whole country, was 262,317 births—39.3 per 1,000. (Thus the Argentine Republic would occupy the third place after Russia and Roumania.)

The morti-births (global figures), 9,049; for every 100 births, 3.44 born dead. (The Argentine situation is somewhat more favorable than Japan, Belgium, France, Holland, Switzerland and Sweden.)

The general mortality in 1911 was 125,727—18.9 per 1,000. (Something like Germany, superior to France, Italy, Spain, Russia, Roumania, inferior to Belgium, England, Holland, Switzerland and Sweden.)

The infantile mortality during the same year: 47,855 children died between 0 and 2 years of age, representing 78.6% of the total infantile mortality, and 38.24% of the general mortality.

It is of interest to note the difference between the birth and death rates in 1911, the balance in favor of the birth rate was 52.30%.

12. As a direct result of sanitation in the Argentine Republic, the puericulture crop of lives in 1911 was 12,000; this not due to the increase in the birth rate, but to the decrease of infantile mortality. In some future work comparison will be made between the puericulture crop of the various countries. In the United States (1911) according to Mr. Nathan Strauss the crop of lives was 125,000.

13. Plan for the Argentine Republic. Generalities have already been referred to, the study of details will therefore be continued.

As we believe it is very necessary to develop this most efficient work through an established plan, subject to improvements, we have decided to offer our personal coöperation.

The following are the leading features of such an up-to-date and complete plan:

Administrative and technical factors, statistics, demography, legislation, and legal actions, medical foundations, medical-pedagogics, preventive and social foundations. The sanitary education in general should not only consist of the well-known notions of "motherhood" and "Puericulture," but should be diversified and complete. In the medical faculties courses should be given on infantile sanitation and puericulture (by specialists), and at the same time courses of law, philosophy and biology should be given.

A central institution of "Puericulture" should be established similar to the one of Porchefontaine, France, and the one of Charlottenburg, Germany. No doubt in these two institutions the most efficient and scientific instruction is given.

14. "Puericulture" and its amplified conception; National Puericulture and its organization. In general a very limited concept is given to the term "Puericulture," and it is obviously necessary to amplify it under the following enunciations: The care of the mother; of the new born, and during the infancy; during the development of the childhood; prophylaxis, education, administrative and legal protection, and, as related to the above enunciations, the demographic, biological, eugenic, social and political factors.

The National Puericulture is formed by the above-given features, and it is therefore necessary to give the physiological and sanitary protection of children a national character. Such a central institution would not only benefit the childhood but indirectly also the manhood wherever established, and would have a very forceful influence as to the physical and intellectual power of the various nations. The national puericulture in its superior concept should be one of the primordial functions of good government.

Vote Proposition. Therefore we beg to submit: A vote by this Congress recognizing the importance of this subject, and that papers should be presented at the next International Congress on School Hygiene, giving direct or indirect facts and figures on this up-to-date subject.

A Proposition: That the National Department of Hygiene of the Argentine Republic, through us or otherwise, will present at the next International Congress on School Hygiene, further investigations on the subject, more complete, co-ordinated and methodized details referring to puericulture and infantile hygiene in general.

LA INSPECTION MEDICO-PEDAGÓGICA EN RIO DE JANEIRO, BRASIL

Notas Para una Guía de Higiene Escolar por el Dr. Moncorvo, Filho.
Director del Instituto de Protección á la Infancia; Jefe Fundador
de los Servicios de Higiene Escolar en Rio de Janeiro

EXTRACTO DE LA PRESENTACIÓN HECHA POR
ANTONIO VIDAL

El Brasil durante los ultimos años muéstrase afanado por seguir el movimiento impreso en todos los países cultivados en favor de los multiples servicios y trabajos que demanda la Higiene escolar moderna. En sus grandes ciudades particularmente; Rio de Janeiro, San Pablo, Bahia, y otras, este movimiento se ha traducido ya en actos y hechos reales. Hechos y actos que sin duda, como puede esperarse fundamentalmente del esfuerzo que vienen desplegando en tal sentido médicos é higienistas, educadores, publicistas, y hombres de administración, experimentarán en breve transformaciones progresivas. Uno de estos hechos, el principal seguramente, constituye la creación en la capital de la república en Mayo de 1910, de una inspección médica de escuelas, bien dotada de personal y de medios para funcionar de acuerdo con las actuales exigencias de esa importante rama de la higiene. Infaustamente, importante repartición cuya dirección, hubo de interrumpirse, por obstaculos diversos sus funcionamiento será reanudado en breve. Al efecto, el ambiente está hecho entre los hombres de ciencia, de educación y de gobierno con que cuenta la capital del Brasil, y el Brasil mismo. Es justamente para hacer frente desde mi cargo directivo á las necesidades prácticas del funcionamiento de la inspección en sus multiples servicios, que acometí la tarea de preparar una "Guía de Higiene Escolar." Guía aún no completa, pero que será integrada, y que me complazco en ofrecer al juicio ilustrado de la asamblea.

Desde luego, como puede verse, son las indicaciones y prescripciones relativas á la casa-escuela y de modo más amplio á la Higiene material: espacios y jardines; agua potable; bancos y enoblaje; utiles diversos, etc., lo que primeramente nos ha preocupado. A este respecto, es con firmeza que he apoyado el ilustre juicio de uno de nuestros higienistas el Dr. Julio Navaes, quien ha avanzado cuanto poseemos en orden á construcciones escolares no resistiría á la critica informada ni menos al analisis que de ellas hiciera un higienista moderno. Y, juiciosamente el propio Dr. Navaes, después de apreciar la dificultad que entrañaría

la feliz transformación en el orden sanitario de esas construcciones originariamente malas. Vale mucho más gastar la fortuna pública en instalaciones nuevas y perfectas que aprovechen á las generaciones que en ellas reciben instrucción, y no de invertir tiempo y dinero en arreglos y refacciones que no llenen el fin deseado.

Aparte de esto, nuestra "Guía" contiene de preferencia lo relativo á la profilaxis de enfermedades infecciosas (sobre cuya materia se ha difundido un folleto con instrucciones); al examen individual, completo de los escolares (con fichas y modelos adecuados); á los actos propiamente de inspección médica, y de manera general á todos los puntos concernientes á la institución médico-pedagógica, consultados debidamente las exigencias del momento actual.

Para terminar esta exposición, me resta unicamente adelantar que, no solo, nos preparamos á proseguir la obra que me honro hacer conocer de la ilustre asamblea, sino aún á perfeccionarla, asimilando los adelantos que aquí se exhiban. Contamos para ello, con la acción decidida de un fuerte núcleo de ilustrados higienistas á cuya cabeza he de permitirme designar al Dr. Paulino Werneck, director de Higiene y Asistencia Publica.

NOTA.—Al presentar este breve extracto del importante trabajo del Dr. Moncorvo, Filho, el delegado argentino Dr. Antonio Vidal, hubo de expresar el sentimiento con que se veía imposibilitado por circunstancias extrañas, el hacerlo con mayor amplitud; y al propio tiempo de reflejar ante la Asamblea el poderoso movimiento que está hoy operandose en el Brasil intelectual y médico en pro de la Higiene escolar, y de las aplicaciones pedagógicas de la fisiología y de la psicología. Limitose á señalar desde el punto de vista médico-pedagógico la importancia del esfuerzo, que de segura será mañana tan fecundo como es hoy noble y esclarecido, en que se halla empeñado un nucleo de medicos, entre los que se destacan: Paulino Werneck, Julio Novaes, Clemente Ferreira, y el propio Dr. Moncorvo.

MEDICAL PEDAGOGIC INSPECTION IN RIO DE JANEIRO

Short Reference as to "A Guide on School Hygiene," by Dr. Moncorvo, Jr.
Director of the Institution for the Protection of Children
Chief and Founder of School Hygiene Service
in Rio de Janeiro, Brazil

During the last few years Brazil has shown herself to be most interested and also active in the movement, works and activities of modern school hygiene, especially in the larger cities: Rio de Janeiro, Sao Paulo, Bahia, and others. This movement has been noticeable, and the results as shown by facts and figures are convincing. Due to the work of the medical profession, hygienists, educators, publicists, and others. One of the principal manifestations of progress in this direction was the establishment in May, 1910, of the so-called "Medical Inspection of Schools," with a staff and elements able to satisfy the needs of modern hygiene. The general idea, and the various experiments are favored by men of science in Brazil, by educators, by the national government, and by the state governments. It was therefore that Dr. Moncorvo initiated this important work: "The Guide on School Hygiene." This work is not as yet completed, but its importance and value is offered to the consideration of this Congress.

The indications and features therein contained are referring principally to the school buildings, and to the material hygiene: Gardens, playgrounds, the water service, fixtures, and so forth. This work has also been based upon the criterion and the eminent opinions of the well-known Brazilian hygienist Dr. Julio Navaes, who initiated the building of modern schools.

Much has to be done to improve the old buildings, and it has been thought advisable however to abandon all work of improvement and to spend some of the public revenues on modern constructions which would benefit the coming generations. Besides, the "Guide" contains everything relating to the prophylaxis of infective diseases, the individual and complete examination of the children by proper authorities, according to the general idea, and methods of medical inspection.

Dealing also with all the details pertaining to medical pedagogics, based upon modern principles.

In conclusion, the good work will be continued with the support of a number of most competent hygienists, among others, Dr. Paulino Werneck, Chief of the Department of Health and Hygiene.

In presenting this brief statement of the forthcoming "Guide," as compiled by Dr. Moncorvo, the Argentine Delegate Dr. A. Vidal has to express his regrets, that due to unforeseen circumstances this statement had to be very brief, yet during the Congress he emphasized the remarkable progress of the medical and intellectual movement in Brazil, in favor of school hygiene, that the future results will be surprising, due to the activities of prominent men of the medical profession, among others, Paulino Werneck, Julio Navaes, Clemente Ferreira and Moncorvo.

NOTA ADICIONAL SOBRE LA CONTRIBUCIÓN ARGENTINA AL IV. CONGRESO INTERNACIONAL DE HIGIENE ESCOLAR

TRABAJOS DE

C. S. COMETTO, L. R. y H. CASSINELLI, KAMINSKI, J. B.
PATRONE Y B. AYROLO

La Delegación del Gobierno de la República Argentina, aparte de los trabajos que separadamente ó en común presentaron sus miembros Drs. Antonio Vidal y Carlos Robertson, y que aparecen insertos en estos "Proceedings," ha dado cuenta de diversos estudios que la fueran confiados, ya sea por los autores mismos, ya por el Comité local constituido en la ciudad de Buenos Aires.

En la imposibilidad, por restricciones del reglamento, ó por motivos de espacio ú otros que no han podido obviarse, de insertarse estas contribuciones, se ha deseado dar una breve idea de su anturaleza. Es lo que hacemos en las lineas que siguen.

1. El Dr. Carlos S. Cometto, trata de la educación de los Niños anormales en la Provincia de Buenos Aires, la mayor y más adelantada de las que forman la Argentina; señalando los rasgos mas acentuados de la "Escuela para Afásicos y Retardados" que funciona en la ciudad de La Plata. La corrección de la tartamúdez, constituye un fin corriente de la escuela; y ella lo realiza con resultado no inferior al que obtienen los más renombrados instutos. Asimismo, el establecimiento obtiene resultados muy satisfactorios en la instrucción de niños retardados, que son, todos, de grados y tipos "pedagógicos." La escuela ha instituido un curso especial para formar y perfeccionar institutores consagrados á este genero de educación.

2. El estudio de los Dres Luis R. y Hamilton Cassinelli, versa sobre los "Niños debiles" y los "Retardados en la edad escolar," en que son examinadas de modo general las modernas instituciones pedagógicas y médicas, creadas en beneficio de los niños organica y psíquicamente deficientes. Los autores se particularizan con las instituciones de la ciudad de Buenos Aires, cuya evolución han seguido de muy cerca.

3. Sobre "Higiene Dental Infantil," el Sr. Juan B. Patrone hace un estudio resumido, en el cual aduce razones y consideraciones favorables á la "Creación universal de clínicas dentales escolares;" el autor

aconseja que para esa creación sean tenidas de modelo determinadas fundaciones: Estrasburgo; Rochester (E.U.); Estocolmo.

4. Los delegados argentinos, Dres Vidal y Robertson, estudian también la "Organización de la Dentística Escolar en la República Argentina." Después de tributar su administración, por los adelantos alcanzados en esta materia por muchas ciudades de la Union Americana, indican las innovaciones y creaciones. Con restricciones respecto á las clínicas fiscales ó del Estado, incitan á las realizaciones preventivas, y aún, por indirecto modo, curativas de la carie dentaria.

El Dr. Robertson, particularmente, se detiene, á la luz de concepciones y hechos nuevos, en el examen de determinados procesos infecciosos que radican en la cavidades bucofaringeas y que guardan conexión con el estado de los dientes.

5. La Dra Isabel Kaminski, examina diversas cuestiones de "Profilaxis Escolar" y de "Medicina pedagógica," deteniéndose á considerar sobre todo las cuestiones practicas relacionadas con la presente situación de la escuela argentina, por lo que atañe á la preservación de las enfermedades infecciosas.

6. El Sr. Bartolomé Ayrolo, presenta datos y antecedentes, numéricos, historicos, sobre la "Institución de Niños sordo-mudos en la republica Argentina," ofreciendo además al juicio de los especialistas, determinaciones varias de caracter reglamentario, y aún un esbozo de reglamento para establecimientos de ese orden. En este ultimo trabajo, ensaya resolver practicamente cuestiones de importancia en la organización interna de un Instituto moderno destinado á la instrucción de Niños Sordo-mudos.

7. En fin, los Delegados, Dres Vidal y Robertson, apoyandose en los trabajos anteriores, en los propios y en datos que exhiben, presentan en síntesis la "Organización tecnica de la Higiene Escolar en la republica Argentina." Esta síntesis que viene á completar la serie de contribuciones informativas que el Comité de este país enviara á la utlima sesión de este congreso (Paris 1910); comprenda un conjunto de referencias versando sobre: edificación escolar; examen individual de alumnos; oculística y dentística; instrucción de ciegos, sordo-mudos y anormales; descentralización de servicios, etc.

SUMMARY OF OTHER ARGENTINE CONTRIBUTIONS TO THE FOURTH INTERNATIONAL CON- GRESS ON SCHOOL HYGIENE

EXTRACT OF PAPERS PRESENTED BY

DRS. C. S. COMETTO, L. R. AND H. CASSINELLI, KAMINSKI, J. B.
PATRONE AND B. AYROLO

The Argentine Delegates, Drs. A. Vidal and C. Robertson, apart from the personal papers presented to the Congress, and published in these proceedings, have referred to several other contributions entrusted to them. Due to lack of space it would be impossible to refer in detail to these various contributions, the delegates therefore beg to present this brief summary:

1. Dr. Carlos S. Cometto, deals with the education of abnormal children in the province of Buenos Aires, giving the leading features of the "Schools for Aphasic and Retarded Children" in the city of La Plata. The improvement of stuttering children is one of the chief objects of the aforesaid school, obtaining the best results, efficiency similar to the best institutions of the world. The education of retarded children is also very satisfactory. This school has also established a special course for teachers devoted to this special work.

2. The paper presented by Drs. Luis R. and Hamilton Cassinelli, refers to "Feeble Children and Those Retarded in the Schooling Age," giving a general description of modern pedagogic, and medical institutions established in favor of feeble children.

3. "Infantile Dental Hygiene," by John B. Patrone, advising the establishment of dental clinics for schools, recommending as models those already established in Strasburg, Stockholm, and Rochester (U.S.).

4. The delegates, Drs. A. Vidal and C. Robertson, have given personal and careful consideration "To Organize School Dentistry in the Argentine Republic."

5. Dr. Isabel Kaminski deals with the various details of "School Prophylaxis, and Medical Pedagogics, Referring More Especially to the Situation of the Argentine Schools."

6. Mr. Bartalome Ayrolo presents facts and figures referring to the "Institution of Deaf and Dumb Children in the Argentine Republic." Presenting for the consideration of specialists some rules and regulations to be applied to similar institutions.

RESULTADOS PRÁCTICOS DE LA INSPECCIÓN MÉDICA DE LAS ESCUELAS EN EL DISTRITO FEDERAL DE MÉXICO, DURANTE LOS CINCO ÚLTIMOS AÑOS

POR

M. URIBE Y TRONCOSO

Es útil de tiempo en tiempo volver la vista hacia atrás y considerar el camino recorrido, con objeto de determinar si los resultados obtenidos compensan las dificultades vencidas y el tiempo y trabajo que se han invertido. Esto es tanto mas necesario tratándose de la inspección médica de las escuelas cuanto que siendo la institución relativamente reciente y habiendo encontrado enemigos acérrimos, que la consideran inútil por lo menos complicada y de escasos resultados prácticos, es necesario demostrar con hechos y con estadísticas las ventajas obtenidas, los escollos que ha sido necesario salvar y los que aun quedan por vencer para perfeccionar el sistema.

En la Ciudad de México y en las Municipalidades del Distrito Federal la inspección médica de las escuelas comenzó a practicarse desde 1896, pero como solo se limitaba a la profilaxis de las enfermedades transmisibles, es necesario considerar sus resultados desde el año de 1908 en que se reorganizó por completo el servicio, instituyendo la inspección higiénica metódica de los edificios escolares, la formación de cédulas sanitarias individuales, el cuidado de la educación física y el tratamiento gratuito de algunas enfermedades de los alumnos en instituciones oficiales.

El aumento del personal médico y la creación de una Inspección General, Oficina Central, de la cual dependen todos los inspectores médicos no sólo de las Escuelas primarias, sino de las Normales, Industriales, Especiales, Secundarias y profesionales, ha permitido ejercer un control efectivo sobre todos los establecimientos educativos y estudiar el alcance práctico de las medidas de higiene ordenadas por los reglamentos.

Voy a ocuparme en este trabajo de las escuelas primarias, por no haber entrado el personal médico de las demás a formar parte del Servicio de Higiene, sino hasta hace tres años.

Me referiré exclusivamente a los resultados *ya obtenidos* sin insistir en los numerosos perfeccionamientos proyectados, pero que desgraciadamente no ha sido posible realizar a causa de la crítica situación porque atraviesa el país.

Edificios Escolares. La construcción de los edificios escolares estuvo encargada, desde 1905 a una Junta de Edificios escolares en la cual tuvieron cabida, arquitectos, pedagogos y propietarios, pero ni un solo higienista. De allí depende que la mayor parte de las escuelas construidas entonces tengan defectos higiénicos de mayor o menor importancia.

Al crearse el Servicio Higiénico escolar en 1908 el Jefe del Servicio entró a formar parte de la Junta. Desde entonces se tomaron en cuenta las reglas higiénicas para la construcción de nuevos edificios y lo que es más, se formó un importante Reglamento detallado indicando todas las reglas a que debe someterse la construcción de la escuela en cuanto a su emplazamiento, extensión por alumno, anexos, etc., etc.

Los resultados de la intervención de los higienistas se ha hecho patente en los edificios recientemente construidos. El alumbrado bilateral de las clases se cambió por el unilateral izquierdo. Se asignaron a las salas las dimensiones adecuadas; se amplió lo más posible la superficie de los patios; se perfeccionaron los anexos de las escuelas; se establecieron baños.

No se limitó la intervención del Servicio Higiénico a la construcción de nuevos edificios, sino que también formuló reglas para la adaptación de casas particulares. En un país nuevo como México, el número de edificios escolares propiedad del gobierno es muy reducido comparado con las necesidades siempre crecientes de la población escolar. Desde hace muchos años se utilizaban, casi sin ninguna modificación, casas particulares, en donde se amontonaban los alumnos en piezas reducidas, mal ventiladas e iluminadas y con escasa superficie de patios.

Aunque la disposición general de las casas particulares en México, con habitaciones alrededor de un patio central se presta mejor que en otros países a transformarlas en escuelas; esto no obstante son necesarias numerosas adaptaciones para hacer salones bien iluminados y ventilados, proveer a los diversos anexos de la escuela y dar la mayor amplitud posible a los patios.

Para facilitar el Servicio se creó un Médico Inspector encargado especialmente de todo lo relativo a casas para escuela, el cual se asocia en sus trabajos con los Arquitectos de la Inspección General de Arquitectura redactando en cada caso un informe acompañado de un croquis explicativo.

Dos o tres veces el Servicio Higiénico ha consultado al Ministerio la clausura de escuelas instaladas en casas particulares, cuyas malas condiciones de salubridad constituían un peligro para la salud de los niños. Bajo la presión de las autoridades escolares los propietarios se vieron entonces obligados a hacer las reformas indispensables.

Una creación cuya iniciativa corresponde por completo al Servicio Higiénico es la instalación de baños de ducha tibia en las escuelas.

Hasta hoy se han instalado en ocho edificios y los resultados son muy satisfactorios desde el punto de vista de la limpieza de los alumnos.

Con objeto de demostrar al gobierno con cifras elocuentes la urgencia de aumentar el número de escuelas en la Capital, para alojar a los 51,000 alumnos que se inscriben cada año, por término medio, los inspectores médicos calcularon la *capacidad higiénica* de las 173 escuelas existentes, a razón de 1.25 metros cuadrados de superficie por alumno, encontrando que se necesita aumentar escuelas para 10,000 alumnos y que si asistiesen todos los niños registrados en el padrón escolar habría que alojar a 21,859 alumnos más.

Esta estadística se hizo por cuarteles de la ciudad, de manera que fuese fácil determinar en donde es necesario dada la densidad de la población escolar aumentar el número de escuelas y donde es necesario disminuir las existentes.

Profilaxis de las Enfermedades Contagiosas. Por dar lugar a consideraciones de distinto orden trataré primero de las escuelas primarias de la capital y en seguida de las escuelas rurales del Distrito Federal.

Las enfermedades transmisibles mas frecuentes en las escuelas de la Ciudad de México: son las enfermedades de la piel: la pediculosis, las tiñas y las verrugas vulgares. La *pediculosis*, según las estadísticas reunidas de los cinco últimos años se encontró en 28,068 alumnos o sea el 14% de la población escolar. La acción de la inspección médica se ha hecho sentir de una manera notable en el mejoramiento del aseo de los alumnos. En los dos últimos años especialmente, la cifra de pediculosos en las escuelas ha disminuido casi una tercera parte.

Los médicos insisten con los maestros y con los padres en la necesidad de la limpieza y sus constantes excitativas acaban por vencer la apatía de las familias.

La tiña era sumamente frecuente en las escuelas de la Ciudad al iniciarse las labores de inspección médica. En 1909: la cifra registrada fué de 3,021 alumnos, mientras que en 1912 bajó a 687. Las causas de este rapidísimo descenso son múltiples. Por una parte la curación de muchos de los enfermos en la Escuela "Balmis" institución oficial especial para enfermos de tiña, por otra el tratamiento privado y por ultimo la emigración de los enfermos a las escuelas parroquiales y particulares adonde no habiendo inspección médica obligatoria son fácilmente recibidos los niños excluidos de los establecimientos oficiales.

La Escuela "Balmis" es una creación del Servicio Higiénico Escolar. Consta de una escuela para niños y otra para niñas, con un departamento médico central. Actualmente están inscritos en ella 500 alumnos de ambos sexos. El personal médico se compone de un dermatologista distinguido, y de las enfermeras necesarias. Se aplica el tratamiento

moderno de los rayos X y la depilación tarda por término medio 18 días después de cada exposición.

Se ha obrado siempre con mucha prudencia evitando las exposiciones prologadas y si en varios casos ha habido que repetir la exposición de algunas placas a los rayos X en cambio solo se ha registrado un caso de radiodermitis. La escuela para niños se abrió en Enero de 1911 y la de niñas en Agosto del mismo año.

Las verrugas son muy comunes en los alumnos habiendo alcanzado en los cinco años un total de 4,805 casos o sea de 2.57%. Para facilitar la curación de esta pequeña dolencia y no excluir de las escuelas a los atacados, se ha instalado en la Escuela "Balmis" un dispensario anexo, en donde se tratan por el asagalvanica u otros medios apropiados a los enfermos, restituyéndolos inmediatamente a sus escuelas.

Para el tratamiento de la Sarna se estableció en el mismo Dispensario un departamento de baños tibios y una máquina de lavar. Los alumnos y en casos especiales, las personas de su familia son curados rápidamente. Los resultados han sido excelentes y la sarna casi ha desaparecido de las escuelas.

La profilaxis de las fiebres eruptivas y de las otras enfermedades trasmisibles se hace en la forma ordinaria por visitas quincenales de los médicos inspectores a cada escuela. Como a cada inspector médico corresponden 4,000 a 5,000 alumnos no es posible que las visitas sean mas frecuentes. En el intervalo de una a otra los maestros estan facultados para separar a los alumnos en quienes sospechen la presencia de alguna enfermedad contagiosa, y no los admiten de nuevo hasta la curación debidamente justificada por el médico de la familia o el médico escolar.

Al principio los maestros no se daban cuenta exacta de las ventajas de no recibir nuevamente a los niños sin el comprobante respectivo de curación. Poco a poco, sin embargo, los médicos inspectores han logrado convencer a la mayor parte de ellos y en caso de duda los alumnos son enviados a la casa del médico escolar para obtener la boleta de sanidad.

La Inspección General de Higiene ha publicado una *Cartilla de los primeros síntomas de las enfermedades contagiosas que pueden presentarse en las escuelas y manera de prevenirlas*, que en forma clara y concisa al alcance de los maestros, les da idea de las enfermedades que ameritan la exclusión. Dicha Cartilla así como un Cuadro mural que la resume han sido de utilidad manifiesta para los maestros.

Asi mismo ha dado excelentes resultados la *Noticia diaria de las enfermedades contagiosas* que se presentan en la Ciudad la víspera, según la comunica al Servicio de Higiene el Consejo S. de Salubridad. Dicha Noticia se reparte diariamente a todas las escuelas, a los médicos es-

colares e inspectores pedagógicos y con su ayuda dase conocer facilmente las casas infectadas y se procede a separar a los hermanos o parientes de los niños enfermos.

Además, se reparte semanalmente a cada médico escolar un *resumen* en el que están consignados los casos de escarlatina, viruela, y tifo que se han registrado en cada Cuartel de la Ciudad, con objeto de que puedan seguir la marcha de las epidemias.

Actualmente hay una epidemia de escarlatina en la Capital y los médicos escolares han prestado ayuda muy eficaz al Conejo de Salubridad para impedir la propagación de la enfermedad, por medio de las escuelas.

Enfermedades no Contagiosas y Cédulas Sanitarias Individuales. Desde hace 5 años se practica el examen individual anual de cada alumno de las escuelas de la Ciudad de México registrándose los resultados en las *Cédulas sanitarias principal y complementaria*. La cédula principal la llena el médico escolar y comprende los puntos siguientes: Edad, vacunación, enfermedades anteriores; enfermedades generales; cabeza y piel; boca nariz y garganta; columna vertebral y extremidades; órganos internos; vientre; sistema nervioso; observaciones e indicaciones a los maestros y como resumen del examen la *Clasificación de salud*, que comprende: 1a Clase: Sanos. 2a Clase: con pequeñas anormalidades. 3a Clase: con grandes anormalidades y 4a Clase: incurables.

La cédula complementaria la llena el maestro de cada grupo y comprende: 1°. Agudeza visual para cada ojo separadamente; 2°. Agudeza auditiva para cada oído separadamente; 3°. Estatura y 4°. Peso.

Se ha reconocido anualmente a todos los alumnos de las escuelas de la Ciudad de México y además a gran parte de los de las escuelas foráneas. El número de exámenes individuales practicados hasta la fecha asciende a 129,027 en la Ciudad de México y 35,081 en las municipalidades foráneas.

Debo desde luego manifestar que la cooperación de los maestros para formar la cédula complementaria, aunque excelente en principio, pues con menor personal médico se puede hacer mayor trabajo, es difícil en la práctica por la resistencia de un gran número de maestros a encargarse de este trabajo extraordinario, que viene a recargar sus labores escolares. Hay gran número de maestros altruistas y bien intencionados que ayudan con gusto a los médicos escolares, persuadidos de la utilidad que reportan los alumnos con los exámenes médicos; pero hay también otros muchos maestros que sólo ven en las medidas y exámenes que se les confían un aumento de trabajo que no están obligados a prestar.

Como por otra parte los resultados prácticos de la inspección médica

dependen en gran manera del cuidado que pongan los padres en remediar las enfermedades de sus hijos, como en general es difícil y dispendioso para ellos ocuparse de curarlos, los maestros no ven un resultado inmediato de la inspección médica y se vuelven enemigos de ella.

Creo pues, que siempre que sea posible deben ser los médicos escolares los que hagan todo el examen de los alumnos. La Inspección General de Higiene se ha dirigido al Ministerio solicitando la creación de un cuerpo de enfermeras que además de sus labores propias se ocupen de llenar las cédulas complementarias, evitando este trabajo a los maestros y ganándonos aliados en vez de detractores.

La comparación entre los resultados de la clasificación de salud de los alumnos es muy interesante porque da idea aproximada de la influencia de la inspección médica sobre el tratamiento de las enfermedades más frecuentes ya que siendo sus cifras las mayores influyen de una manera notable en los tantos por cientos de la clasificación.

Comparando entre sí los años de 1910 a 1911 y de 1911 a 1912 se observó que el número de los sanos aumentó en 5%, al mismo tiempo que disminuyó también en 5% el número de alumnos de 2a, clase o sea con pequeñas anormalidades.(1) Este resultado, tratándose de enfermedades no contagiosas es debido en gran parte al tratamiento. En los Dispensarios gratuitos de la Ciudad de México, se ha notado un gran aumento en el número de los alumnos de las escuelas que concurren a buscar la curación de sus enfermedades. Como se vé en la gráfica adjunta los padecimientos más frecuentes fueron la anemia (19%) y la esscrófula (7.2%) entre las enfermedades generales.

Entre las de la boca la caries dentaria alcanzó un promedio de 27% en los cinco años, pero en el año último, aislado, llegó a 35.6%.

Esta cifra es todavía muy inferior a la realidad, pues muchas caries incipientes o intersticiales no son registradas por los médicos escolares.

A causa de la gran frecuencia del padecimiento, la Inspección General del Servicio obtuvo la creación de un Dispensario Dental especial para los alumnos de las escuelas, el cual está instalado en una dependencia de la Escuela Nacional Dental.

El personal primitivo compuesto de un dentista y varios ayudantes ha resultado insuficiente y acaban de nombrarse dentistas más.

Las vegetaciones adenoides aisladas son poco frecuentes en las escuelas de México. En cambio la hipertrofia de las amígdalas es muy frecuente alcanzando la proporción de 8%.

Las disminución de la agudeza visual se registró en 29.6% de los alumnos; en el promedio general del quinquenio, pero en el año de 1911-1912 llegó a la cifra de 35%.

(1) Este aumento de los niños años no se marcó ya en el año siguiente.

La causa parece ser el mayor número de caries dentaria registrada en los exámenes individuales.

Como decia antes, numerosos alumnos acuden a los Dispensarios gratuitos para ser examinados. Los vicios de refracción son los que después de la caries dentaria han sido tratados en mayor número de individuos. Tanto los hospitales especiales para enfermedades de los ojos, como las policlínicas gratuitas han visto llenarse sus salas de niños enfermos. Desgraciadamente no ha sido posible hasta hoy obtener la fundación de Dispensarios escolares, que presten atención especial a los alumnos, pues las instituciones generales el exceso de trabajo hace que por lo general, los niños no tengan la atención preferente que necesitan para no abandonar el tratamiento.

Educación Física. Entre los médicos del Servicio Higiénico existe uno, especialmente dedicado a la vigilancia de la práctica de la Educación física en las escuelas. Su acción no ha sido todo lo eficaz que sería de desearse porque los inspectores y profesores especiales de gimnasia dependen directamente de la Dirección General de Educación Primaria y no del Servicio Higiénico. Sin embargo, en las Escuelas Superiores y en las Normales se ha obtenido por medio de juntas y conferencias el mejoramiento y unificación de los métodos de educación física.

Departamento de Antropometría. Desde 1911 quedó anexo al Servicio Higiénico un Departamento destinado a formar los promedios de crecimiento de los niños mexicanos. Se comenzaron los trabajos en los alumnos del Hospicio de pobres que podían ser medidos anualmente con regularidad. Como el número de observaciones es todavía pequeño, la Inspección General procuró utilizar los datos de peso y estatura que toman anualmente los maestros y que aunque sujetos a errores por el gran número de observadores y la poca pericia de algunos de ellos, pueden dar datos exactos si se tiene en cuenta la gran cantidad de medidas acumuladas.

Se calculan detenidamente las medidas de cerca de 60,000 alumnos y con ellos se formaron las curvas adjuntas, que son bastante exactas.

Comedores Escolares. La institución de los comedores escolares es reciente en México, data del año de 1911, en que el Congreso de la Unión votó la cantidad de \$300,000 para proporcionar alimento a los niños pobres mediante el pago de una cantidad insignificante o gratuitamente. Los médicos escolares han prestado útiles servicios visitando los comedores e informando tanto acerca de los edificios como respecto a la cantidad y calidad de los alimentos que se dan a los alumnos.

Personal del Servicio. Con objeto de obtener mejor preparación para los médicos que entran al Servicio, se creó la institución de Médicos

Adjuntos. Además, por medio de Conferencias prácticas y por la fundación de la *Sociedad de Inspectores Médicos de las Escuelas*, corporación semi-oficial que recibe una subvención del Ministerio de Instrucción Pública se ha procurado favorecer el intercambio de ideas y estimulado la producción de trabajos originales y de investigación científica.

Para ayudar a la difusión de la higiene escolar entre los maestros y el público y dar a los médicos inspectores información moderna respecto a los progresos realizados en la especialidad se fundaron los *Anales de Higiene escolar*, periódico bimensual que está ya en el 3er. tomo de su publicación y que contiene además de los informes oficiales del servicio trabajos de investigación y artículos de vulgarización higiénica.

Escuelas Rurales del Distrito Federal. Existen 211 escuelas rurales diseminadas en el Distrito Federal. La inspección médica esta confiada a solo cuatro médicos, y como tienen que recorrer grandes distancias se les exige solamente visiten las escuelas dos o tres veces en el año y que, hagan el examen individual de todos los alumnos. Para hacer posible este último requisito la cédula sanitaria principal es mucho más condensada que la de la capital y contiene los siguientes datos: Edad, vacunación; enfermedades anteriores; enfermedades generales; cabeza y piel, órganos internos, columna vertebral; indicaciones a los maestros; clasificación de salud. La cédula complementaria es la misma que para la capital.

Como era de esperarse el número de niños enfermos fué menor en las escuelas rurales (71.9% de sanos 27.5% con pequeñas anormalidades, 0.4% con grandes anormalidades y 0.06% incurables). Sin embargo la frecuencia de la mala nutrición, de la anemia y de la escrofulosis hizo que se extendieran los beneficios de los comedores escolares a estas escuelas.

La disminución de la agudeza visual y la caries dentaria dieron un contingente menor en más de un 10% que en la capital. En cambio las dificultades para el tratamiento son mayores por no haber Dispensarios gratuitos y tener casi siempre que trasladarse los enfermos a la Capital.

A los alumnos afectados de tiña que llegan a 2.6% hubo que dejarlos en sus escuelas, a condición de que se les cortara el cabello a rape, se les pusiera dos veces por semana tintura de yodo diluida y se cubriera la cabeza con una gorra de lienzo. La Inspección General de Higiene proyecta la creación de un cuerpo de médicos y enfermeras que viajen de un municipio a otro y valiéndose de aparatos de rayos X portátiles traten a todos los niños enfermos.

Amplificación del Servicio Higiénico. Al principio la Inspección General del Servicio Higiénico Escolar tenía bajo su dependencia unica-

mente a los médicos de las Escuelas Primarias. En Julio de 1910 se le agregaron los médicos de las Escuelas Normales, de las Industriales y de Artes y Oficios, de las escuelas secundarias, del Internado Nacional y de las escuelas profesionales dependientes de la Universidad.

Así ampliada su esfera de acción hubo que alojarla en un edificio especial en el que también se instaló el Departamento de Antropometría.

En 1912 se pusieron además bajo su dependencia a los Médicos Inspectores de las escuelas de los Territorios Federales: dos para el Distrito Norte y Sur de la Baja California; uno para el Territorio de Tepic y otro para Quinata Roo.

Toda la institución depende directamente del Ministerio de Instrucción Pública y Bellas Artes y está en relaciones oficiales para lo que respecta a las enfermedades contagiosas, con el Consejo S. de Salubridad.

PRACTICAL RESULTS OF MEDICAL INSPECTION IN THE SCHOOLS OF THE FEDERAL DISTRICT OF MEXICO, DURING THE LAST FIVE YEARS

BY

M. URIBE Y TRONCOSO

It is very useful to look back, from time to time, and take a retrospective view of the road we have traversed, so as to observe whether the results obtained compensate the difficulties overcome, and the time and labour spent.

This is all the more necessary when treating of the medical inspection of schools, because the institution is comparatively recent and has met with bitter enemies, who consider it useless or at least complicated; so that it is necessary to show by facts and statistics the advantages gained, the obstacles which it has been necessary to overcome, and those which remain to be surmounted, so as to perfect the system.

In the City of Mexico and Municipalities of the Federal District, medical inspection of schools began in 1896, but as it was limited to the prophylaxis of transmissible diseases, we must consider the results from the year 1908, when the service was completely reorganized, when a methodical hygienic inspection of school buildings, the formation of Physical Examination Records, physical training and the gratuitous treatment of certain diseases of pupils in official institutions, were established.

The increase in the medical staff and the creation of the General Inspection, a Central Office, on which depends the medical inspectors not only of the Primary Schools, but also of the Normal, Industrial, Special Secondary and Professional, have made it possible to exercise an effective control over all the educational establishments and to study the practical results of the hygienic measures prescribed by the regulations.

In this paper I am going to treat only of Elementary Schools, as the medical staff of the others have begun to form a part of the Hygienic Service three years ago.

I shall exclusively refer to results *already obtained*, without insisting on the many improvements in project, but which unfortunately, could not be put in practice, owing to the critical situation of the country.

School Buildings. The building of school houses was intrusted, from 1905, to a Board of School Buildings, in which were included archi-

fects, pedagogues and landlords, but not a single school doctor. Hence it is that the majority of the schools then built suffer from hygienic defects of greater or less importance.

When the medical inspection of schools was instituted in 1908, the Chief Inspector was made one of the Board. Since then the rules of hygiene were taken into account in the construction of new buildings. Moreover, important and detailed rules were drawn up enjoining all the regulations to which the building of schools must be subject, as regards site, space allotted to each pupil, premises, etc.

The result of the intervention of school doctors has been evident in the school houses recently built. The bilateral lighting of the school rooms was changed for the left unilateral. The dimensions of the class rooms were properly fixed; the courts were enlarged as far as possible; the premises were improved, and baths were built.

The intervention of school doctors was not limited to the building of new schools; rules were drawn up for adapting private houses. In a new country like Mexico, the number of school houses belonging to the Government is small in comparison with the ever-increasing needs of the scholars. For many years private houses, with scarcely any modifications, were utilized, where the pupils were heaped together, in small rooms, badly lighted and ventilated, and with small courts.

Although the general arrangement of private houses in Mexico, with rooms all round a central court, is better adapted than in other countries to their transformation into schools, yet many changes are necessary to make the rooms well lighted and ventilated, to provide for the different premises, and to have the courts as ample as possible.

To facilitate the service, a Medical Inspector was appointed with the special charge of examining everything relating to the school house. He is associated with the architects of the General Inspection of Architecture, and in every case draws up a report with an explanatory drawing.

In two or three cases, the Department of School Hygiene has advised the Ministry of Public Instruction to close schools established in private houses, whose unhealthy conditions were a danger to the children. Under pressure from the school authorities the owners were obliged to make the necessary reforms.

One institution which is due entirely to the initiative of the Department of Hygiene is that of warm shower baths. Up to the present, they have been installed in eight schools, and the results are very satisfactory in the cleanliness of the scholars.

In order to prove to the Government, by figures, the urgency of increasing the number of schools in the Capital, so as to hold 51,000 pupils, which is the number, on an average, annually enrolled, the School

Physicians calculated the *hygienic capacity* of the 173 existing schools, at the rate of 1.25 square meters per scholar, and found that it is necessary to enlarge the schools for 10,000 pupils, and that, if all the children enrolled were to attend, they would have to hold 21,859 scholars more.

These statistics were drawn up from wards of the city so that it is easy to determine where the number of schools, given the number of children of school age, must be augmented, and where the existing schools should be diminished.

Prophylaxis of Contagious Diseases. I will treat first of the Elementary Schools of the Capital, and secondly of the Country Schools of the Federal District, as they give rise to considerations of a different order.

The most frequent transmissible diseases in the schools of Mexico City are: Diseases of the skin; *pediculosis*, *ringworm*, and the *molluscum contagiosum*. *Pediculosis*, according to statistics made up from the last five years, was found upon 28,068 scholars, or 14% of the school children. The effect of medical inspection was made very perceptible in the greater cleanliness of the children. In the last two years especially, the number of cases of *pediculosis* in the schools decreased almost one-third.

The physicians impress upon the teachers and parents the necessity of cleanliness and their continual exhortations in some cases finally overcome their apathy.

Ringworm was extremely prevalent in the schools when medical inspection was first begun. In 1909, the number was 3,021. In 1912, it descended to 687. The causes of this rapid diminution are manifold. On the one hand, the treatment of many patients in the "Dr. Balmis School," a special institution for ringworm patients, on the other hand, home treatment, and lastly, the emigration of the affected to parish and private schools, where, as there is no official compulsory medical inspection, the children excluded from the official establishments are readily received.

The "Dr. Balmis School" is a creation of the Department of School Hygiene. It consists of a school for boys and another for girls, with a central medical department. At present 500 pupils of both sexes are enrolled. The medical staff consists of a specialist in dermatology, and the required number of nurses. The modern treatment of X-rays is used, and the depilation lasts, on an average, eighteen days after each exposure.

Much care has always been taken to avoid long exposures, and if, in several cases, it has been necessary to repeat the exposure of certain patches to the X-rays, on the other hand only one case of radidermatitis

has occurred. The boys' school was opened in January, 1911, and the girls' in August of the same year. Molluscum Contagiosum is very common among the scholars, reaching, in five years, a total of 4,805 cases, or 2.57%. To cure this slight ailment, without excluding the children attacked from the schools, a special dispensary has been attached to the "Balmis School." There they are treated by the galvanic method, or other means, suited to the patients who are at once restored to their schools.

For the treatment of scabies, tepid baths and a washing machine were established in the Dispensary. The pupils and in certain cases, the members of their families are readily cured. The results have been excellent, and scabies has almost disappeared from the schools.

The prophylaxis of eruptive fevers and other transmissible diseases is made, in the ordinary way, by fortnightly visits of school doctors to each school. As each physician has to examine from 4,000 to 5,000 pupils, it is impossible to make the visits more frequent. In the intervals, the teachers are authorized to separate the pupils in whom they suspect the presence of any contagious disease, and these are not again admitted without the certificate of the family physician or school doctor.

At first the teachers did not realize the advantages of denying admittance to the children without a certificate. But, little by little, the medical inspectors have gained over the majority, and now, in doubtful cases, the pupils are sent to the school doctor to obtain their health certificates.

The Department of School Hygiene has published a "Primer of the First Symptoms of Contagious Diseases, and the Manner of Preventing Them in Schools," which, in a clear and precise way, gives the teachers an understanding of the diseases which merit temporary exclusion. This primer containing a chart which gives a résumé of the whole matter, has been of *great utility* to the teachers.

The Daily Bulletin of Contagious Diseases which occur in the city the previous day, as communicated to the Department by the Board of Health, has given very good results. The Bulletin is distributed daily to each school, to the School Physicians and School Inspectors, and by its means the infected houses are easily detected and the infected children and other members of their families are excluded from the schools.

Moreover, a résumé giving all the cases of scarlet fever, smallpox and typhus which have occurred in each ward of the city, is distributed weekly to each school physician, so that he can follow the march of the epidemics.

At present there is an epidemic of scarlet fever in the Capital and the School Doctors have lent very efficient aid to the Board of Health in preventing the spread of the disease through the schools.

Non-Contagious Diseases and Physical Examination Records. During the last five years an annual physical examination of every pupil in the schools of Mexico City has been practised, and the results registered on the principal and complementary health records. The principal record is filled up by the School Doctor and comprises the following points: age, vaccination, previous diseases; general diseases; head and skin; mouth, nose and throat; spinal column and extremities; internal organs; belly; nervous system; observations and hints to the teachers, and in a résumé of the examination the *Health Classification*, which includes: 1st class: Healthy. 2nd class: Slight abnormalities. 3rd class: Great abnormalities. 4th class: Incurable.

The complementary record is filled up by the teacher of each group and comprises: 1st: Vision, of each eye separately. 2nd: Hearing, of each ear separately. 3rd: Height. 4th: Weight. All the scholars of Mexico City have been examined each year and also those of the majority of the Country Schools. The number of special examinations practised up to date amount to 129,027 in the city, and 35,081 in the country districts.

I must at once state that the coöperation of the teachers, in filling up the records, though excellent in principle, has been found difficult in practice, for, though with a small number of physicians a larger amount of work can be done, yet there is a repugnance on the part of a large number of teachers to undertake this work in addition to their ordinary teaching. There are many altruistic and good teachers, however, who are pleased to help the School Physicians, as they are convinced of the utility resulting to their pupils from medical examinations; but there are also many teachers who only see in the examinations and measures confided to their care an increase in work which they are not obliged to perform.

As on the other hand, the practical results of medical inspection depend, in a great measure, upon the care which the parents devote to curing their children's ailments, the remedies of which, as a rule, are difficult and costly, the teachers do not see the immediate result of medical inspection and so become its enemies.

I am therefore of opinion, that, whenever possible, only school doctors should make the physical examination of the pupils. The Department of Hygiene has applied to the Ministry, soliciting the institution of a body of nurses, who, besides their usual work, shall fill up the complementary records, and thus save trouble to the teachers and gain for us allies instead of detractors.

A comparison between the results of the health classification of scholars is very interesting, because it gives an approximate idea of the influence of School Medical Inspection upon the treatment of the most

usual diseases, as the figures of the latter, being the largest, influence notably the percentage of classification. Comparing the years 1910 to 1911 and 1911 to 1912 it was observed that the number of healthy pupils increased 5%, while the number of scholars of the 2nd class, *i. e.* those with slight abnormalities, diminished also 5%. (1) This result in the case of non-contagious diseases, is principally due to the treatment. In the free Dispensaries of the City of Mexico a great increase has been noted in the number of scholars who apply for the cure of their ailments. As will be seen from the adjoined table, the most frequent diseases were anemia (19%), and scrofula (7.2%), among the general diseases. In mouth diseases, dental caries reached an average of 27% in the five years, but in the last year, taken alone, it reached 35.6%.

These figures are still much below the reality, for many cases of incipient or interstitial caries are not recorded by the School Physicians.

On account of the great frequency of this ailment, the Department of Hygiene secured the creation of a special Dental Dispensary for school children, which is installed in a department of the National Dental School.

The original staff, composed of a dentist and several assistants soon became insufficient, and five more dentists have just been appointed.

Adenoid vegetations, isolated, are rare in Mexico. On the other hand, hypertrophy of the amygdalae is very frequent, reaching a proportion of 8%.

Decrease in visual acuteness was registered in 29.6% of the pupils, on the general average of the quinquennium; but in the year 1911-1912 alone it was 35%.

As I said before, many scholars apply to the gratuitous Dispensaries to be examined. Errors of refraction are those which, after dental caries, have been treated in the greatest number of individuals.

Physical Education. Among the School Doctors there is one specially dedicated to superintending Physical Training in the schools. His influence has not been so efficient as could be wished, because the special inspectors and professors of gymnastics depend directly on the Board of Education and not upon the Department of Hygiene. However, in the High Schools and the Normal Schools improvements and uniformity in the methods of Physical Training have been obtained, by means of meetings and conferences.

Anthropometric Department. Since 1911, there has been attached to the Hygienic Service a department for obtaining the normals of growth

(1) This increase in healthy children was not observed in the following year. The reason seems to be the greater number of dental caries observed by the physicians without a corresponding increase in the treatment.

of Mexican children. Work was commenced with the inmates of the Poor Asylum who could be regularly measured annually. As the number of observations is still small, the Department of Hygiene endeavored to utilize the data of weight and stature, taken annually by the teachers, and which, although subject to errors on account of the great number of observers and the inexperience of some of them, may yet produce exact data, if the great number of measurements accumulated are taken into consideration.

The measurements of about 60,000 pupils were carefully calculated and from these the adjoining tables have been drawn up, which I think are fairly correct.

School Lunch. The institution of School Lunch is recent in Mexico, dating from 1911, when the Congress appropriated \$300,000 to supply food to poor children, who pay a very small sum or nothing. The School Physicians have lent valuable services by visiting the lunch rooms and reporting about the buildings, as well as the quantity and quality of the food supplied to the pupils.

The Staff. In order to afford a better preparation to the doctors who enter the service, a corps of adjunct physicians was created. Besides, by means of practical conferences and the foundation of the "Society of Medical Inspectors of Schools,"—a semi-official corporation which receives a subvention from the Ministry of Public Instruction—efforts have been made to favour an interchange of ideas, and the production of original papers and scientific investigations have been stimulated. To help in the diffusion of School Hygiene among children and parents, and in order to give School Physicians modern information regarding improvements effected in this direction, the "Anales de Higiene Escolar" was founded. This is a journal published every two months and now in its third volume, which contains, besides the official reports of the Service, original papers and articles for the propaganda of school hygiene.

Country Schools in the Federal District. There are 211 country schools scattered throughout the Federal District. The medical inspection is intrusted to only four doctors, and as they have to travel long distances they are only required to visit the schools three or four times in the year, and to make the physical examination of each scholar. In order to fulfill this last requirement, the principal health record is much more condensed than that of the Capital and contains the following data: Age, vaccination; previous diseases; general diseases; head and skin; internal organs; spinal column; hints to the teachers; classification of health. The complementary blank is the same as in the Capital.

As might be expected, the number of diseased children was less in the country schools than in the city (71.9% healthy; 27.5% with slight abnormalities; 0.06% incurable). However, the frequency of malnutrition, anemia and scrofula made it imperative to extend the benefits of the School Lunch Rooms to these schools.

Diminished visual acuteness and dental caries were 10% less than in the Capital. On the other hand, the difficulties of treatment are greater, as there are no gratuitous dispensaries and the patients must nearly always be transferred to the city.

The scholars attacked by ringworm who numbered 2.6% had to be left in their schools on the condition that their hair should be cut close, a solution of tincture of iodine applied and the head covered with a linen cap. The Department of Hygiene contemplates the creation of a corps of physicians and nurses to travel from one municipality to another and treat with portable X-ray apparatus all diseased school children.

Growth of the Department of School Hygiene. At first, the General Inspection of School Hygiene had under its direction only the doctors of the Elementary Schools. In July, 1910, were adjoined the physicians of the Normal Schools, of the Industrial Schools, of Crafts and Trades (Artes y Oficios), of the Secondary Schools, of the National Boarding (Internado Nacional) and of the Professional Schools depending on the University.

As its sphere of action was so extended, it was found necessary to take a special building where the Anthropometric Department was installed.

In 1912, the School Inspectors of the Federal Territories were also placed under its direction; two for the North and South Districts of Lower California; one for the Tepic Territory and another for Quintana Roo.

The entire institution depends directly upon the Ministry of Public Instruction and Fine Arts, and is in official communication with the Board of Health for all that concerns contagious diseases.

L'ISPEZIONE SANITARIA SCOLASTICA IN ITALIA

BY

ERNESTO CACACE

Incaricato dal comitato organizzatore del 4° Congresso Internazionale d'Igiene Scolastica in Italia, accettai l'onorifico incarico per gratitudine verso gli uomini insigni che mi tributarono tanto onore, e per il dovere di rendere ancora più nota la partecipazione del mio paese al movimento, diffuso nel mondo civile in favore della vigilanza sanitaria scolastica. Però intuii subito le difficoltà del grave incarico.

Il servizio sanitario scolastico, che per molti anni in forma embrionale si svolse in parecchie città italiane, solo da pochi anni ha assunto in alcune città, per iniziativa municipale, un ordinamento moderno e lodevole ed un' indipendenza dagli altri servizi igienici e sanitari, e per le esigenze dell'organizzazione non è ancora interamente noto con relazioni stampate e complete del suo funzionamento e dei suoi risultati. Di più esso non è subordinato ad uniformità d'indirizzo, nè è tuttora fortemente favorito dall'iniziativa statale, che solo può compiere, come in altri paesi con uffici tecnici centrali, opera di coordinamento e di organizzazione razionale.

Compresi ben presto che la mia relazione per *tali ragioni* sarebbe stata *incompleta e frammentaria*.

Malgrado ciò, convinto che essa avrebbe messo in evidenza iniziative degne d'interesse e che avrebbe aperto la via e sarebbe stato stimolo alla compilazione di rapporti posteriori più completi, resi più agevoli dalla pubblicazione inmancabile dell'opera e dei risultati di ciascun ufficio sanitario scolastico, accolsi l'invito; e, forte ancora di tale convincimento, presento la mia relazione, certamente incompleta per le ragioni cennate e molto riassuntiva per la brevità dello spazio concessi, chiedendo venia se ai miei sentimenti di gratitudine e di dovere ed alla mia buona volontà non furon pari la perfezione e la struttura della compilazione.

Come già feci cenno, l'iniziativa statale in Italia riguardo all'igiene nella scuola non fu sinora veramente degna di considerazione.

Pochi mesi or sono, il Ministro dell'Istruzione chiamò presso il Ministero con l'incarico di consulente un chiaro igienista, il Prof. Sclavo, il quale pare che si sia messo all'opera, per intensificare ovunque la vigilanza igienica scolastica e per favorire la formazione di una coscienza igienica nazionale.

Intanto la nostra legislazione riguardo all'igiene scolastica è abbastanza embrionale.

Oltre le leggi 18 luglio 1878, 8 Luglio 1888, 15 luglio 1900, 15 luglio 1906, 4 Giugno 1911, con cui si concessero agevolazioni ai comuni per la costruzione degli edifici scolastici, oltre la legge 26 dicembre 1909 che provvide all'insegnamento dell'educazione fisica, e oltre la legge 1911 che fissò le linee della complessa figura della moderna assistenza scolastica, vi sono le disposizioni degli articoli 98, 143, 144, 145 del Regolamento generale sanitario, 3 febbraio 1901, che riguardano la scelta dei locali, le disinfezioni e la chiusura delle scuole e l'allontanamento degli scolari in caso di malattie trasmissibili, l'obbligo degli ufficiali sanitari o di medici, all'uopo delegati, di visitare le scuole.

Vi sono inoltre i due regolamenti (R. D. 25 Novembre 1900 e R. D. 11 Gennaio 1912) intorno alla compilazione dei progetti per la costruzione degli edifici scolastici, e il regolamento (16 Ottobre 1903) riguardo alla profilassi delle malattie contagiose della scuola, oltre il regolamento (31 marzo 1902) sulla vaccinazione obbligatoria degli scolari ed oltre l'articolo 118 del Regolamento generale per l'istruzione elementare (6 Febbraio 1908).

Di più esistono varie circolari ministeriali: quella del 1° Aprile 1904 sulla prevenzione della miopia; quella del 24 Aprile 1906 riguardo alla tubercolosi e all'esame ed allontanamento dei sospetti; quella del 3 Giugno 1909 sulla propaganda antimalarica scolastica; quella del 1° Novembre 1909 intorno ai danni dell'eccessivo lavoro scolastico.

Tutte queste disposizioni non ebbero una reale efficacia, sia perchè fu sinora scarsa la cultura igienica del maestro, vero collaboratore del medico, sia perchè nella grandissima maggioranza dei comuni la vigilanza sanitaria scolastica fu affidata all'ufficiale sanitario, incaricato, con compenso per lo più misero, di un cumulo notevole di importanti mansioni, e non ad un medico scolastico, opportunamente preparato ed all'uopo esclusivamente delegato.

E'giustizia notare che in alcuni comuni la vigilanza sanitaria si compie con zelo lodevole nelle scuole dagli ufficiali sanitari, fra i quali ricordo quelli di Ascoli-Piceno (Dr. Maione), di Rieti (Giannini), di Sestri Ponente (Parodi).

Però poche città che sono in maggior parte fra le più grandi ed importanti d'Italia, sono dotate di un ufficio medico scolastico con personale speciale, cioè con medici scolastici o ispettori sanitari scolastici: Bergamo, Bologna, Brescia, Genova, Milano, Padova, Parma, Pavia, Roma, Torino, Venezia, (oltre forse qualche altra città di cui non mi riuscì aver notizia). (1) Fra le altre grandi città Firenze ha un servizio che funziona in modo lodevole ed è mansione dal 1907 di medici addetti

(1) Fra i medici scolastici sono degni di nota per la loro lodevole attività: Albertini, Bellei, Boselli, Calcaterra, Condulmer, Frassi, Graziani, Molinari-Rosatti, Neri, Rembaud, Eonzig, ed altri.

alla 2a Sezione dell'ufficio municipale d'igiene (Igiene della collettività); Napoli e Palermo sono munite di un servizio, che è affidato ai medici comunali condotti sotto la dipendenza di un ispettore sanitario, e che sarà al più presto meglio disciplinato; Bari lo compie dal 1910 per mezzo dell'ufficiale sanitario aggiunto, coadiuvato dai medici condotti. In Verona il servizio si esegue da un medico aggiunto dell'ufficio municipale d'igiene incaricato pure della vigilanza sulle malattie infettive. In Mantova fu deliberato il posto di medico scolastico, e furono stampati una scheda individuale sanitaria ed il casellario scolastico, ma non esiste ancora una speciale ispezione, perchè la vigilanza si compie tuttora dall'ufficiale sanitario.

I medici scolastici nelle città indicate dipendono dal direttore dell'ufficio municipale d'igiene.

Per lo più in ciascuna città vi è un sol medico scolastico. In Bologna la Sezione scolastica dell'ufficio d'igiene, che esiste dal 1908, ha un direttore e due ispettori sanitari scolastici per i due distretti scolastici della città, oltre i medici condotti del Suburbio, che presiedono al servizio forese; in Firenze son due medici incaricati della vigilanza scolastica; in Milano sono cinque ispettori; in Roma dieci medici scolastici; in Torino quattro; in Venezia due; in Padova anche due: un medico scolastico, incaricato delle più alte mansioni cioè di igiene, antropologia pedagogica, psicologia, e un aiuto medico scolastico incaricato di quelle di medicina pratica e profilassi scolastica.

In generale l'ispezione sanitaria scolastica comprende: la vigilanza sugli ambienti scolastici, la vigilanza sullo scolaro, sul maestro e sul personale addetto alla scuola e la profilassi delle malattie scolastiche, l'osservanza delle norme igienico-pedagogiche, la sorveglianza sulla refezione scolastica, la designazione degli scolari per le istituzioni parascolastiche e per quelle di assistenza, l'educazione igienica dello scolaro e del maestro.

D'ordinario, al principio di ogni anno scolastico si visitano i locali e si procede ad una rassegna di tutti gli alunni, per giudicare sulla loro ammissibilità, per escludere quelli affetti da malattie, per indicare quelli da iscriversi a Sezioni Speciali.

Le visite si compiono per lo più ogni quindici giorni nelle scuole primarie comunali: in alcune città una volta la settimana (Roma), in altre una volta ogni mese (Napoli, Padova), in parecchie anche in ogni caso di richiesta; e si eseguono pure in diverse città nelle scuole primarie private e nelle scuole medie. In Brescia nel 1910-11 furono fatte 289 ispezioni nelle scuole pubbliche e 43 in quelle private; in Padova nel 1911-12 raggiunsero il numero di 1984, di cui 1880 per le scuole comunali e 104 nelle non comunali. I risultati delle visite coi provvedimenti si riferiscono all'ufficiale sanitario, talvolta con un modulo

speciale come a Bologna, Genova; in Roma si dà notizia immediatamente al direttore della scuola per casi urgenti oppure con conferenze mensili al direttore didattico centrale. D'ordinario i medici scolastici hanno l'obbligo di redigere una relazione annuale di tutto il servizio.

Qualche volta si compie una visita di controllo degli scolari nell'ufficio, come a Bologna, dove a tal'uopo esiste un *Laboratorio municipale di Igiene scolastica*, fornito dei più moderni apparecchi di microscopia, antropometria, fisiologia, rinolaringoscopia, ecc.

La vigilanza sugli ambienti scolastici si riferisce all'edilizia, alla manutenzione e all'arredamento in modo che i nuovi edifici rispondano a tutte le esigenze igieniche ed ai vecchi si apportino i miglioramenti opportuni.

In Padova e Genova si redige il *casellario sanitario scolastico*. Quello di Padova è una dettagliata relazione riguardante il fabbricato nel complesso e nei particolari, e comprende indicazioni relative a ubicazioni, orientazione, costo, data di costruzione, fognatura, acqua potabile, manutenzione e notizie degli alunni: esiste anche la *pianta fotometrica* di ogni aula. Quello di Genova, ideato dal Ragazzi, è un registro in cui la scuola e i suoi annessi sono descritti in tutti i particolari (ubicazione, orientazione, pianta della località, pianta dei vari piani, capacità, pavimenti, illuminazione, ventilazione, riscaldamento ed arredamento delle aule, scale, corridoi, ricreatorio, palestre, cucina, refettorio, acqua potabile, fontanelle, lavatoi, latrine, bagni, sputacchiere, pulizia), e inoltre è indicato, anno per anno, l'andamento sanitario della scolaresca con notizie delle disinfezioni eseguite e della chiusura delle aule (1).

Si compila la *carta biografica o libretto sanitario* dai medici scolastici con la collaborazione dei maestri. Varia un po' da città a città. Fra le più complesse sono quelle di Brescia, Genova, Padova: quella di Brescia comprende note anamnestiche, fisiche e fisiologiche, fisio-psicologiche; quella di Genova, oltre le note anamnestiche familiari e individuali, le condizioni economiche, l'esame somatico e psicologico, contiene note riguardanti assenze, profitto, refezione, cura alpina o balneare, scuola all'aperto, ricreatorio, uso di bevande alcoliche; quella di Padova registra le note anamnestiche, i dati antropometrici e l'esame psicofisiologico e psicologico. Fra le più semplici sono quella di Roma, breve e precisa, e quella di Milano priva delle numerose note antropologiche e fisio-psicologiche. Una buona carta è quella di Bologna. In Padova la parte anamnestiche, psico-fisiologica e psicologica è affidata all'insegnante e la parte antropometrica è redatta dall'ufficio medico-scolastico nelle scuole urbane e pure dagli insegnanti in gran parte di

(1) In alcune scuole (Genova) si redige il *registro sanitario* scolastico, che contiene le indicazioni dei provvedimenti riguardo al locale e all'arredamento e quelle degli alunni allontanati o assenti per malattie e sottoposti a vigilanza sanitaria.

quelle di campagna. Per agevolare il compito dei maestri in qualche città, come Padova, furono pubblicate "Istruzioni per la compilazione della carta biografica."

In alcune città la carta si redige soltanto per alcuni alunni: in Roma si compila dai medici scolastici solamente quella degli scolari con anomalie di carattere o insufficienza mentale e di quelli destinati alle scuole all'aperto ed ai campi scolastici estivi; per tutti gli altri scolari dagli insegnanti si rilevano semplicemente il peso, la statura, la circonferenza toracica.

La visita individuale per la carta biografica in alcune città (Genova, Milano) si esegue in una stanza speciale (1).

In Bergamo la carta fu compilata nel 1912 per 200 scolari ed in Brescia nel 1911 per 2936; in Padova nel 1910-11 furono redatte 2868 carte biografiche dall'ufficio medico scolastico e 4243 dagli insegnanti; e nel 1911-12, 3113 dall'ufficio e 4834 dagli insegnanti.

Si provvede ovunque con diligenza alla profilassi delle malattie scolastiche, e a tal uopo s'insiste sulla cooperazione dei maestri mercè le istruzioni per prevenire la diffusione delle malattie infettive.

Varia un po' l'organizzazione dei servizi per la profilassi delle malattie, che non permettono la frequenza alla Scuola.

In Bologna, mediante un modulo, l'allontanamento degli scolari si partecipa all'Ufficio di istruzione, che con altro modulo lo comunica ai direttori scolastici e ai capi cantonali; la riammissione dallo stesso ufficio con altro modulo si notifica ai capi cantonali.

In Firenze i medici accertano a domicilio molti casi sospetti di malattie contagiose, per prendere provvedimenti pur mancando la denuncia del medico curante.

In Genova l'insegnante avverte gli scolari del dovere delle loro famiglie di notificare alla direzione scolastica le loro malattie; il direttore assume notizie sull'esattezza delle notificazioni dei parenti in caso di assenze; l'ufficio d'igiene comunica alla direzione scolastica i dati relativi ad alunni, maestri o altre persone della scuola affetti da malattie contagiose o conviventi con infermi; gli alunni sono allontanati con un modulo e sono riammessi con un certificato redatto o vistato da un medico scolastico o specialista municipale.

In Milano le pronte denunce dei morbi infettivi all'ufficio d'igiene e le comunicazioni telefoniche tra quest'ufficio e le scuole facilitano la trasmissione di ordini e il funzionamento dei servizi; gli alunni infermi hanno le cure necessarie a domicilio con accertato isolamento oppure all'ospedale dei contagiosi col consenso delle famiglie; per turno all'ufficio d'igiene dai medici scolastici si constata la guarigione degli scolari,

(1) In Milano si è costituito un *casellario sanitario degli alunni*, in cui ogni scolaro visitato figura con una scheda contenente le notizie necessarie.

ai quali si rilascia un modulo per la loro riammissione; in casi di malattie nelle famiglie di uno scolaro, maestro o inserviente si provvede all'allontanamento e alla riammissione secondo le norme del regolamento. In Napoli il direttore scolastico deve comunicare all'ufficio sanitario sezione, con un modulo, l'assenza dello scolaro, del maestro o dell'inserviente, che si protrae oltre il 5° giorno; il sanitario indaga apprendendo spesso l'esistenza di casi di morbi infettivi e riferisce all'ufficio centrale, donde, con altro modulo, si trasmette al direttore l'ordine di allontanamento. Collo stesso modulo si invia ai direttori l'ordine di esclusione di persone della scuola, coabitanti con infermi. La riammissione si verifica mercè un altro modulo rilasciato dall'ispettore sanitario dopo la guarigione dell'infermo e le necessarie disinfezioni.

In Padova l'aiuto alla sorveglianza igienica raccoglie le denunce di malattie infettive pervenute nel giorno precedente e chiede telefonicamente i nomi degli ammessi all'Ospedale d'isolamento nel giorno antecedente. Poi alle scuole di campagna si dà avviso telefonico di allontanare gli scolari abitanti al numero di mappa che segna la casa ove si verificò il caso di malattia; per le scuole urbane il suddetto aiuto si reca nelle abitazioni del malato, assume informazioni sulle scuole frequentate dai fanciulli o altre persone coabitanti con l'infermo, e si porta in queste scuole per rilasciare ordine di allontanamento. La riammissione si compie con permesso dell'ufficio.

Ovunque si eseguono le disinfezioni prescritte e si provvede alla chiusura delle aule e delle scuole e alla rivaccinazione.

Per la profilassi delle malattie che permettono la frequenza alla Scuola si provvede con diligenza. D'ordinario lo scolaro è isolato ed obbligato a curarsi ed a presentare alla scuola un modulo attestante la continuazione della cura. In alcune città (Genova, Padova) si avvertono le famiglie di sottoporre lo scolaro alle cure opportune.

In Bologna i tignosi sono allontanati e sottoposti alla röntgenterapia nella poliambulanza; i tracomatosi sono allontanati se esiste pericolo di diffusione, ma, se l'infermità è mite ed ha oltrepassato il periodo secretivo, non sono allontanati oppure sono riammessi dopo un periodo di sospensione coll'obbligo di curarsi. Anche in Padova per i poveri si provvede alla röntgenterapia, e alla cura in iscuola di alcune forme cutanee.

Notevole è il numero degli oftalmici in Bari: nel 1912 su 6722 alunni visitati furono notati 805 tracomatosi (11.97%) oltre molti affetti da altre oftalmie. Invece in Padova il tracoma è rarissimo; frequenti sono i vizi di rifrazione per cui si danno agli scolari poveri gli occhiali durante le lezioni.

Per la profilassi ed anche per la cura delle malattie cutanee ed oculari come di quelle della bocca, dell'orecchio, del naso, del laringe, della

psiche, si avvalgono i medici scolastici dell'ausilio di medici specialisti; che in Padova sono 5 consulenti specialisti onorarii aggregati all'ufficio medico scolastico, in Bologna sono quelli delle cliniche e della poliambulanza, in Milano, Roma, ecc., sono gli specialisti comunali. Gli scolari però sono liberi di accedere allo specialista di fiducia.

Si favorisce ovunque la creazione di scuole per tracomatosi e tignosi, per assicurare l'incolumità ai sani ed istruire e curare i malati. La prima scuola per tracomatosi fu aperta in Milano nel 1896 per iniziativa privata; e la prima, creata da un'amministrazione comunale, fu quella di Brescia seguita da quelle di Palermo, Bologna, Genova, Roma ecc.; e recentemente fu deliberata l'istituzione di tali scuole in Napoli e Bari. La scuola per tignosi sorse prima in Milano; esiste anche in Brescia, Firenze ecc.

Si comincia a dare notevole importanza alla cura e profilassi dentaria dopo le inchieste che rivelarono la frequenza della carie dentaria nelle scuole italiane: 82% Milano (Platschick), 73% Genova (Ragazzi), 67-79% Bologna (Calcaterra), 64% Rieti (Giannini), 55% Livorno (Salni), 54% Torino (Momigliano), 41.6% e 45.7% nei maschi di 6.9 e 9.12 anni e 36.2% e 40.5% nelle femmine Parma (Frassi), 37 a 40% Brescia (Molinari Tosatti), 18.9% di carie estesa Padova (Neri).

In Genova, Livorno, Milano, Padova, Roma, Torino, si è organizzato un servizio odontoiatrico. In Genova i medici scolastici segnano le condizioni della dentatura su un modulo, con cui lo scolaro si reca dal suo dentista oppure, se povero, in uno dei due ambulatori oculistici municipali, e che riporta a scuola con le notizie delle cure fatte; con opuscoletti del Ragazzi si compie utilissima propaganda. In Milano l'Istituto Stomatologico con lieve tassa annua provvede alla cura degli scolari che la richiedono; in Padova s'invisano gli scolari all'odontoiatra ed in Roma all'ambulatorio centrale comunale con modulo speciale; in Torino per ciascuna delle 5 zone, in cui fu divisa la città, fu scelto un dentista, che cura gli alunni poveri e nota le cure prestate su apposito modulo.

In alcune scuole si provvede dal medico scolastico alla cura discolari con medicinali ricostituenti o specifici, fra questi ultimi deve notarsi il chinino per la cura e profilassi antimalarica.

Sono degne di nota le *consultazioni medico-pedagogiche* di Padova per gli scolari non malati da richiedere l'intervento del medico: con moduli speciali s'invitano i genitori a condurli nell'ufficio, e dopo l'osservazione si danno loro i consigli sull'indirizzo di vita.

E' notevole la vigilanza sulle refezioni scolastiche, sui bagni, sulla ginnastica, sul canto. I medici scolastici designano gli scolari per le varie istituzioni scolastiche. Fra queste sono degne di nota, per impronta di originalità, le *classi differenziali*, gli *asili-scuola*, le *sale*

scolastiche ortopediche, i campi scolastici estivi di Roma, le classi dei deboli di Padova.

Le classi differenziali servono per gli scolari con ritardo scolastico senza vere anormalità dell'intelligenza o irrequieti senza note di epilettoidi o amorali; gli asili scuole, dopo la deliberazione della *commissione permanente di selezione scolastica*, accolgono gli scolari anormali di caratter e anormali dell'intelligenza; le sale ortopediche correggono o combattono la deformità degli scolari, oppure la prevengono; i campi estivi danno vigore agli alunni deboli o predisposti che si attendano in località salubri dei dintorni di Roma ed emigrano settimanalmente di campo a campo per circa 40 giorni; le classi dei deboli servono ad istruire coll'insegnamento poco gravoso i fanciulli meno sviluppati fisicamente che d'inverno fanno ginnastica respiratoria e cura ricostituente ed in Maggio e Giugno frequentano la scuola all'aperto e il dopo scuola all'aperto.

Non mancano le altre istituzioni: colonie scolastiche, ospizii marini, scuole all'aperto ecc.; queste ultime tendono sempre più a diffondersi: Padova, Venezia, Verona, Brescia, Genova, Roma, Milano ne sono già dotate. Esiste persino l'organizzazione dei *Ragazzi esploratori* (Boy Scouts), il cui centro maggiore è Genova.

I medici scolastici formano anche l'educazione igienica degli scolari e dei maestri, alla quale concorrono pure le *cattedre ambulanti d'igiene e le scuole popolari di maternità* da me ideate e fondate; e compilano studii e pubblicazioni fra cui è degna di nota speciale "*Il Medico Scolastico*" del Graziani.

THE NECESSITY FOR THE STANDARDIZATION AND UNIVERSAL ADOPTION OF MEDICAL SCHOOL INSPECTION IN THE UNITED STATES

BY

FRANK ALLPORT

It is, of course, unnecessary before an audience of this character, to make any appeal as to the necessity for medical school inspection. The members of this Congress are well aware of the universal urgency of this movement. Let us therefore assume that this matter is well understood, and let us then pass on to the next step in this great reform movement, viz, the necessity for the standardization of such inspection. In other words, the advisability of adopting well matured and thoroughly digested plans of medical school inspection, in all the different states or cities of America, so that we may all be working under a universally adopted system in all parts of the country.

While the necessity for medical school inspection is generally conceded by all advanced hygienists, the means for putting the idea into action are as widely separated as the poles. Some observers advocate that such inspection be conducted under the auspices of the boards of health, while others feel that the boards of education are better, still others believe that both boards should participate in the work, and that certain conditions, such as physical defects, etc., should be assigned to the latter body, while all conditions which menace the public health should fall under the supervision of the boards of health. Some people believe that the physical defects and diseases of the eye, ear, nose and throat can be safely entrusted with teachers to detect (but not to diagnose or treat) provided a carefully prepared system of easy examinations is placed at their disposal and they are thoroughly instructed as to its use. Other people believe that this is a strictly medical work and should not be entrusted to the laity; others still believe that such examinations should be made by especially instructed school nurses. Even when such examinations are made by school teachers (in places where they have overcome the idea that teachers are not competent to do the work, and that it is a great hardship to impose this labor upon them) the examinations are hardly ever made in the same manner for there is always some one in power (usually a doctor) who is unwilling to accept the experienced judgment of some one else, and who insists upon the insertion into the plan, of some unfortunate idea of his own, in order

to impress upon the scheme the stamp of his own selfish personality. In some cities the medical inspectors are well paid and have great responsibilities imposed upon them, while in others their salaries are small and their positions are humiliatingly unimportant. School nurses are an essential part of the plan in some cities, while in others, these great aids to success are missing. The work demanded of the medical school inspector, his hours for work, his remuneration, his authority, etc., differs widely in different cities, and these diverging views also characterize the sentiments concerning school buildings and equipment, play grounds, lavatories, baths, open-air schools, schools for defectives, etc., etc. And so I might go on, if necessary, and further demonstrate the inharmonious and chaotic condition of medical school inspection in this country, but additional evidence is quite unnecessary, as you all know that I am but speaking the truth. My object in reading this paper before you to-day, is not to demonstrate to you the necessity for medical school inspection, for this you already know; neither is it to expose the fact that there is not at the present time any generally adopted plan of procedure by which such inspections are carried out, for this you also know. What I really wish to-day is to urge upon you the necessity for deliberately and thoroughly developing and adopting some superior and practical method of procedure, by which such medical school inspection can be properly standardized and carried out. I think that one of the first things to be understood is that while all schools should be medically inspected we must acknowledge that there must be widely different methods adopted in places of varying population. What will answer in New York, Chicago, Philadelphia, etc., will not answer in Santa Fe, South Bend or Schenectady, and the methods that are satisfactory in these cities will not answer for those cities, towns, and villages of 5,000 or less in population.

Amongst other important features of medical school inspection may be mentioned the hiring of inspectors who can devote their entire time to the work, and the liberal paying of all inspectors; the clothing of inspectors with authority and then demanding that they "make good;" the distinct duties (concerning medical school inspection) which should be expected of boards of education and boards of health; the necessity, duties and salaries for school nurses; the teachers' functions concerning physical examinations; school architecture, ventilating, plumbing, lighting, playgrounds, etc.; school desks, books, blackboards, cleanliness, sex hygiene, etc.; free lunches, free glasses, schools for defectives, schools for the deaf, dumb and blind, etc.; out-of-door schools, camping schools, etc., etc. These are some of the health topics upon which intelligent, medical and pedagogic opinion should be able to form reasonably unanimous sentiments, and these crystallized and well-digested

ideas should circulate from city to city, from town to town, from state to state and from country to country, so that before long all schools shall be working under practically identical medical and hygienic laws, stripped of all personality and broadly and impersonally fashioned for the public good.

It should be remembered, also, that while the ultimate object is the same in all countries, viz, the health and welfare of the coming generation, the methods used to obtain this end must usually differ more or less in the varying lands. What will do for America will not do for Russia, and what is best for England may not be suitable for Italy. Therefore in considering the advisability and necessity of standardizing medical and pedagogic thought concerning medical school inspection and how it can best be carried out, it should not be forgotten that the conditions and necessities for all countries are not the same, and can hardly be made so.

In order to bring this question squarely before this Congress therefore, I will take the liberty of suggesting that at the proper time some one will move that the President appoints a committee for every country represented at this Congress, to take up the subject of framing rules or resolutions concerning the necessity for the adopting and standardizing of medical school inspection in the different countries, and that these rules or resolutions shall be reported at the next meeting of this Congress, and shall be acted upon at that time. The committee shall consist of six members of this Congress for every represented country. Three of this committee shall be physicians and three shall be teachers. If for any reason the numerical strength of this committee for any country cannot equal six, the President shall use his discretion in appointing the committee, always, however, endeavoring to have a committee evenly balanced as to physicians and teachers. Should the committee from any country complete its labors before the next meeting of this Congress, they may publish their report in any suitable publication in order to expedite the benefits of their labors.

SESSION TWENTY

Room E.

Thursday, August 28th, 9:00 A.M.

MEDICAL INSPECTION (Part Two)

LOUIS W. RAPEER, *Chairman*

DR. W. G. BISSELL, Buffalo, N. Y., *Vice-Chairman*

Program of Session Twenty

- WILLARD S. SMALL, Ph.D., Eastern High School, Washington, D. C.,
Lecturer in Education, George Washington University. "Some
Results of Systematic Physical Examination of High School
Pupils."
- DE LANCEY ROCHESTER, M.D., Associate Professor Principles and
Practice of Medicine, University of Buffalo, N. Y. "Medical
Inspection of School Children."
- WILLIAM J. GALLIVAN, M.D., Chief of Division of Child Hygiene,
Department of Health, Boston, Mass. "Control of Medical
Inspection of Schools."
- GEORGE M. CASE, M.D., Elmira, N. Y. "Benefits to be Derived from
the Regular Medical Inspection of Our Schools."
- WILLIAM HOWE, B.S., Deputy Commissioner of Health, Albany, N. Y.
and
- HERBERT D. SCHENCK, M.D., Consulting Ophthalmologist and Otologist,
State of New York. "Examination of the Vision, Hearing,
and Nasal Respiration of the School Children by the Teachers
of New York State."
- LOUIS W. RAPEER, Department of Education and Psychology, New
York Training School for Teachers. "The Administration of
Educational Hygiene."
- DANIEL V. MCCLURE, M.D., Examining Physician Division of Child
Labor, Department of Health, Buffalo, N. Y. "Examination
of School Children for Labor Certificates."
- ELEANOR H. JOHNSON, Committee on Hygiene of School Children of
the Public Education Association, New York City. "Relation
of Medical Inspection of School Children to Their Education."
- N. THOMAS ENNETT, M.D., Medical Director of Richmond Public Schools.
"How to Get Results in Medical Inspection of Public Schools."

SOME RESULTS OF SYSTEMATIC PHYSICAL EXAMINATION OF HIGH SCHOOL PUPILS

BY

WILLARD S. SMALL

A more exact title of this paper would be "Some Results of Systematic Physical Examination, Physical Training, and Health Supervision of High School Girls," for it concerns girls only and the results described are joint results of physical examination, physical training and general supervision of health. Physical examination of pupils is an outgrowth of physical training and general supervision of health is a later development.

Physical training was introduced into the Washington High Schools a good many years ago. Originally it was merely an extension of the orthodox calisthenics of the elementary schools into the high schools. It consisted of class exercises. There was practically no individualizing of instruction. The beginning of individual physical examination was coincident with and in the interest of corrective gymnastics. Record was made of measurements of height, weight, and chest, and of observations of posture and carriage, and condition of the ankles. Gradually the examination has become more extensive and more thorough and the record has become more and more an individual history.

At the present time in the Eastern High School, we try to make the record so complete as to constitute a chart, as it were, of the physical character of each individual. The items covered in the examination are: Height (standing), weight, girth of chest (normal, inspired and expired), capacity of lungs, carriage (with respect to head, shoulders and hips), spine, ankles, eyes, ears, heart, lungs, nose, throat and glands of neck. Age, both chronological and physiological, is recorded. As complete a family record as possible is secured, including nationality of parents and grandparents, causes of death of parents, if dead, and family diseases; also a record of diseases or ailments that each pupil has had prior to entering high school. In addition copious supplementary notes of individual cases are kept.

The eyes are tested separately with the Snellen Chart. The test determines only whether vision is normal. No effort is made to diagnose the nature of defects that may be detected. Pupil is referred to family physician or directly to an oculist if desired. Color vision is not tested.

The ears are tested separately both by voice in conversational tone and by ticking of a watch.

With respect to the spine, the posture is carefully observed and as accurate an examination of the spine is made as usual clothing will permit. If defect is revealed in this superficial examination, a thorough examination is generally made (as permitted by parent); and is supplemented, if possible, by a physician's examination. Corrective exercises are prescribed.

The heart and lungs are tested by the unaided ear and abnormal sounds are noted and recorded.

Examination of the nose and throat, for detection of adenoids and enlarged tonsils, is made without any mechanical aids, except tongue depressor.

Pupils regularly enter school in September and February. Each pupil is examined twice a year, at the time of admission and at the end of the school year in June. In special cases re-examinations are made during the school year at intervals as frequent as may be necessary to keep fully informed of the pupil's condition. All teachers are instructed to report to the physical training teacher any girl whose class work shows a falling off or who appears to be lacking in vigor. Many special examinations result.

In all cases where the examination reveals a seriously defective condition or where the diagnosis is obscure, an effort is made to have a supplementary examination, either by one of the school medical inspectors or by the family physician, preferably the latter, as it customarily brings about a consistent coöperation of parents, physician and teacher. In every such case, the physical training teacher has first a personal interview with the mother and explains the defective condition and asks her to have the family physician examine the girl and then confer with her. In the majority of cases coöperation is secured. We have found that one personal interview is worth many formal notices.

The records have been dominated by the purely practical purpose of promoting the physical welfare of individuals and without any thought of published results. It occurred to me, however, when asked for a contribution to this Congress, that a survey of these records might yield something of interest and value. I have studied carefully the records of 284 girls, who attended the school last year and who had been members of the school consecutively from two to eight semesters. I was not altogether disappointed in my hope, but I have found that much of the most interesting and valuable data are in the individual notes. This kind of material cannot be treated statistically. Some of it, indeed, cannot be generalized. I have been able, however, to tabulate certain data in regard to number and kind of defects found and correction of the same.

The following table, based upon the 284 records studied, shows the number who had defects at any time while attending the school, the

total number of defects recorded, number of defects remaining uncorrected at the end of the present school year, and the total number corrected while these pupils had been in attendance.

Semester	No. Pupils	No. with Defects	No. of Defects	No. Defects June, 1913	No. Corrected
VIII (I).....	10	9	29	16	13
VIII.....	55	38	85	45	40
VII.....	11	7	23	12	11
VI.....	44	23	54	39	15
V.....	17	10	22	15	7
IV.....	65	37	67	50	17
III.....	29	15	34	29	5
II.....	53	29	64	56	8
Total.....	284	168	378	262	116

Of these 284 girls, 168 or 59%, had defects of some kind.

1. These 168 girls had a total of 378 defects, an average of more than two each. Some had as many as five defects. The variation in number is as follows:

5 girls had 5 defects each.
 10 girls had 4 defects each.
 35 girls had 3 defects each.
 61 girls had 2 defects each.
 57 girls had 1 defect each.

Thus 50 girls had 170 defects, or 47% of the total number. One hundred and eleven, or 70%, show a record of two or more defects.

2. The recorded defects are distributed as follows:

Eyes.....	93	Nose and throat.....	19
Ears.....	24	Enlarged glands.....	26
Spine.....	30	Developmental.....	48
Heart.....	29	Carriage.....	71
Lungs.....	2	Weak ankles.....	36
Total.....			378

The item "developmental defects" is somewhat vague and altogether unsatisfactory. It includes cases of retarded development, under-size, nervous conditions incident to adolescence, and, indeed any defective condition associated with adolescence. Because our records were so personal I found it impracticable, without going over the personal notes very minutely, to segregate and classify these various items any further.

3. Reference to the first table shows that at the end of the present school year, 116 defects out of a total of 378, or 30%, had been corrected.

(1) A group that entered in February and had completed eight semesters February 1, 1913. Their record ends February 1, 1913, instead of June, 1913.

Further analysis of the record shows that correction had been made in the cases of 88, out of the 168, girls who had defects, or in 52% of the cases. In 25 instances all defects had been eliminated, leaving 143 girls with 262 defects.

The correction of defects is a gradual process as is shown by comparison of the records of two groups of pupils who, in June, had just completed eight semesters and two semesters respectively.

Semester	No. Pupils	No. with Defects	Total Defects	No. Defects June, 1913	No. Defects Corrected
VIII.....	55	38	85	45	40
II.....	53	29	64	56	8

Nearly one-half of the defects of the fourth year pupils had been corrected, but only one-eighth of those of the first year pupils.

The progressive correction of defects is further illustrated by the following year-to-year record of 35 girls, who, in June, 1913, had attended the school for four consecutive years.

Year	No. with Defects	Total No. of Defects	No. of Defects Corrected
I.....	35	72	13
II.....	32	61	7
III.....	29	56	11
IV.....	28	45	8
Total.....	35	79 (2)	39
At end of IVth year.....	25	40	39

The number of defects is reduced from 79 to 40, or 50%; and the number of defective individuals is reduced from 35 to 25, or 30%.

Most of the uncorrected defects are remediable in whole or in part. The distribution of defects in case of the 35 girls just mentioned is as follows:

	No. Defects	No. Defects Corrected	No. Defects		
			Not Corrected	No. Defects Remediable	No. Defects Irremediable
Eyes.....	20	16	4	4	..
Ears.....	2	..	2	..	2
Spine.....	7	4	3	1	2
Heart.....	4	1	3	2	1
Nose and throat ..	4	2	2	1	1
Enlarged glands ..	2	..	2	2	..
Developmental....	18	5	13	13	..
Carriage.....	10	5	5	5	..
Weak ankles.....	12	6	6	6	..
Total.....	79	39	40	34	6

(2) Seven new defects were recorded after the first year of these pupils.

Only six of the uncorrected defects are probably irremediable; two, hearing; two, spinal curvature; one, heart; one, throat affection.

All the cases of eye defect were errors of refraction. The four girls whose visual defects were not corrected neglected or refused to secure glasses. In one instance the pupil refused to consult an oculist. They went through the four years of high school life under the handicap of constant eye strain.

Similarly, in practically all the other cases of uncorrected defect, the recommended treatment and regimen have been neglected. The cases of defective carriage and weak ankles that persist at the end of four years are shown by the record to be no more serious than the cases that were corrected. These girls simply failed to follow advice in regard to clothes, shoes, corrective exercise, medical treatment when prescribed, and general hygiene.

As before stated the developmental defects are a somewhat miscellaneous group, but, in every one of the eighteen cases, the defective condition could be wholly or largely remedied by proper regimen. To a certain degree these defects are incident to growth and with proper regimen are normally outgrown. That was distinctly the case with the five that completely overcame the defects. Two of the thirteen that were uncorrected showed improvement sufficient to indicate that they will be overcome if proper regimen is continued. The other eleven could be overcome if the girls could be compelled to follow a hygienic course of life, though in some cases they have lived unhygienically so long, that the defective conditions have become deeply rooted. A complete revolution in habits of diet, dress, sleep and exercise would be required.

Comparatively few of the defects recorded require surgical treatment or even prolonged medical treatment. Of the 378 defects recorded, 230 are included in four groups: Eye, spine, carriage, ankles. The eye defects are corrected by proper glasses; practically all of the spine, carriage, and ankle defects are remediable by proper regimen, proper clothing and corrective exercises under a competent physical director. Further many of the cases of heart trouble, enlarged glands and developmental defects would yield to regimen and exercise.

The most important results of my study is the conviction that the fundamental aim of physical education is the development of a physical conscience on the part of the students. It is more than an ideal of physical strength, grace and efficiency; it involves the idea of duty—the duty of realizing the physical virtues of strength, grace and efficiency.

THE MEDICAL INSPECTION OF SCHOOL CHILDREN

BY

DE LANCEY ROCHESTER

The very great importance of the medical inspection of school children as a means of preventing the occurrence of epidemics of infectious diseases is too well known to need any statistics to prove it. Therefore, I do not propose to refer to that part of the subject. The purpose of this communication is to urge upon educators the importance of insisting upon the correction of physical defects in children which impair their normal development, physical, mental and psychical.

For this purpose, I shall introduce my subject by the report of several cases, using them as a text.

Case 1. A. G.; male; age, 9; U. S.; English parentage; second grade public school; report of teacher is that he is stupid, listless, poor student. Medical examiner noticed that he was a mouth breather. Was sent home with the advice that he be taken to physician and attended to.

Three months later he came under my observation—referred to me on account of development of asthma. Examination revealed that his parents, brother and sister were well, that he had been a bright baby, had had a severe attack of measles at three years, and since then chickenpox and whooping cough. Had been sent to kindergarten when five, where he had remained one year. Since then his progress had been slow, having reached the second grade of grammar school when nine.

Physical examination revealed, as the abnormalities leading up to his asthma, hypertrophied faucial tonsils, adenoid growth in vault of pharynx and inflammation of frontal sinuses on both sides. I explained carefully to the parents the bearing of these conditions upon the asthma and also upon his backwardness in school. They took my advice and spent three or four months in having him put anatomically in good shape, the result being that he was not only cured of his asthma, but that in the next year and a half he completed three years of school work by studying some in vacation, and is now considered a bright student.

Case 2. J. W.; girl; age, 15; U. S.; American parentage. Private school; reported by teacher as fair student but stayed away from school frequently on account of headache and, so, was below the average of her companions. Without going into too great detail, examination

revealed that she had a compound hyperopic astigmatism. The fitting of proper glasses not only relieved her of her headaches and improved her standing in school, but so improved her general health that she gained 15 pounds in two months of the school term.

Case 3. My notes of this case have been mislaid. I rely on memory. A boy in the second grade had been so inattentive that he was referred by his teacher to the medical inspector, who found that he was decidedly deaf. Upon examination it was found that this deafness was due to catarrh of the middle ear following an attack of measles. Appropriate treatment was instituted and the boy completely cured in three months, since which time he has been as attentive as the other scholars and has maintained a fair standing in school.

These three cases illustrate what can be accomplished for the individual child by carefully following out the indication for treatment of conditions found first by competent medical inspection in school.

The following case illustrates to what degree the individual may suffer when indications for treatment are not followed out.

G. S., girl, at ten, was brought to my attention because she had been sent home from school on account of convulsions. Her history revealed a decidedly neurotic heredity and that she had suffered with alternating attacks of asthma and convulsive seizures for several years, the asthma having developed first. A thorough examination showed that these attacks were due to a persistent constipation and to obstruction to her breathing in her nose. I explained carefully to the mother the importance to the child's welfare of having her diet carefully supervised and of having her nose attended to surgically. She seemed to realize the importance of this matter and started on the diet and general hygiene immediately. This caused so great improvement that it was two months before she could be persuaded that surgical procedure was necessary. During the week immediately following the preliminary operation the child was worse, but after that improved steadily, going two and at times three months without attacks of either asthma or convulsion, but they were never completely cured, because the mother would not insist that the surgical work be completed. When I first saw the child she was having convulsions two or three times daily. Eighteen months later the seizures were only about once in two or three months when several might occur in a week. I talked to the mother one and one-half hours trying to persuade her of the necessity of further surgical procedure and telling her that she had no right to doom her child to such mental degeneration as the persistence of these convulsions would surely bring about. The fact that the child, not appreciating what the result would be, did not wish to undergo the discomfort of further

operation, was of more importance to her than the future of the child, and although she had seen what marked improvement followed surgical procedure, she did not allow further work to be done. I have since learned that she soon began to let up on the dietary and hygienic regime which had been so carefully thought out for her and the attacks recurred. I have no doubt that by this time the child is a hopeless epileptic.

The most common physical defects which interfere with proper mental development are adenoid growth in the vault of the pharynx, nasal obstruction, disease of the accessory sinuses of the nose, middle ear disease, mastoiditis, defects of the optic apparatus in one or more ways, causing eye strain and all its reflex disturbances of headache, dizziness, stupidity, indigestion and hence impaired general nutrition, etc.

All physicians have had cases similar to the few which I have reported, some in which most brilliant results have followed the carrying out of the indicated treatment and some in which the neglect of parent or guardian to properly carry out the treatment indicated has resulted in the imperfect development of the mentality of the child.

The object of this communication is to plead that measures be adopted whereby the fullest physical and so the fullest mental development can be assured to the individual growing child in spite of parental ignorance or prejudice and that the State not only point out the way in which such results may be obtained, but insist that such measures be carried out so that every child may have the *sanum corpus* so necessary for the *sanam mentem*.

I would accordingly suggest that this section take action recommending to the Congress that a committee be appointed to formulate a plan by which such cases could be properly dealt with.

DISCUSSION OF

DE LANCEY ROCHESTER'S PAPER

BY

DR. JOHN W. BRANNAN

Dr. John W. Brannan of New York stated that he had listened with great interest to the papers by Dr. Small, Dr. Rochester, and Dr. Gallivan, all relating to the medical inspection of school children in the cities of Washington, Buffalo, and Boston. In each instance it appeared that the inspection was very thorough and revealed the existence of a

large number of defects of various kinds among the children, but in each instance also it appeared that there was much difficulty in securing proper correction of these defects, even when the children were of rather mature age. For instance, in Washington, they were pupils in the Girls' High School, presumably from fourteen to eighteen years of age. A number of these girls, according to Dr. Small, had serious defects of the eyes, and yet it was impossible during the four years in which the girls were in school to secure the correction of these defects by the wearing of glasses, though influences were brought to bear both upon the children and their parents. Dr. Rochester related histories of several individual cases in which it was apparently impossible to persuade the parents to have evident defects set right. It might seem well, therefore to endeavor to devise some legislation which would result in the correction of a larger proportion of defects than was the case at present. Dr. Brannan therefore seconded the resolution proposed by Dr. Rochester that a committee should be appointed by this Congress to take under consideration the framing of such measures, with instructions to report at the next meeting of the American School Hygiene Association.

CONTROL OF MEDICAL INSPECTION OF SCHOOLS

BY

WILLIAM J. GALLIVAN

The diseases detected in the examination of school children can be divided into two groups, communicable and non-communicable disease.

From the earliest times, supervision over communicable disease has been vested in Boards of Health and to the effective isolation of such cases is due the scarcity of epidemics.

Accurate and early diagnosis of cases of communicable disease is of the utmost importance for the protection of the community. Few physicians, except those connected with public health work, ever have the opportunity of seeing certain communicable diseases, and failure to recognize these diseases among the school population would soon result in disaster. So that no one would be bold enough to assert that work of this sort should be placed in the hands of School Committees.

Failure to diagnose non-communicable disease early and accurately is not fraught with such danger to the patient or to the community. In many cases, an accurate diagnosis cannot be made without instrumentation, and such instrumentation is not feasible under any system of medical inspection. Through sheer necessity many diagnoses of non-communicable disease will be provisional and the pupil referred to the family physician. Granted that the time will never come when supervision over communicable disease in school children will be transferred to School Committees, this unit should be the foundation stone upon which the superstructure of medical inspection of schools should be erected. If it be argued that only a small percentage of disease detected among school children is communicable, such assertion is a tribute to Boards of Health for efficient isolation of existing communicable disease and a noteworthy contribution to preventive medicine.

To appoint a second group of physicians in the schools to examine children for non-communicable defects would be in violation of every principle of conservatism. Such duplication of effort and the inevitable overlapping of the school physician's duties would result in the disintegration of school work.

A study of the statistics of the defects among school children shows that the great proportion of those requiring medical treatment occur among the new pupils entering school for the first time. Everybody agrees that the best time to care for these defects is before the child enters school. Particularly is this true in cases of adenoids, before

damage is done to the *membranam tympani*, owing to suppurative process, secondary to adenoids, or before permanent bony changes occur in the facial bones. So, too, in pathological tonsils. The earlier the removal of such tonsils the less chance of establishing a habitat for bacteria, with the consequent result of arthritic disease and the resulting permanent damage to the endocardium.

Such work among children, under school age, is well defined work of Divisions of Child Hygiene, departments within Boards of Health.

In Boston, the Division of Child Hygiene is divided into three subdivisions:

1. Pre-Natal and Post-Natal Work.
2. Medical Inspection of Schools.
3. Physical Examination of Licensed Minors.

The work of the first division is confined to children up to age of five years, the generally accepted period of such school age. It is in this subdivision that preventive medicine finds its best field. And as the work of this Division progresses with the same degree of efficiency which has characterized other fields of human endeavor, it is confidently predicted that children of the future will enter school far better equipped physically than their predecessors.

Such work is wholly medical and wholly foreign to the educational work for which School Committees have been created.

Medical inspection of schools under the control of School Committees would be confined to the public schools, leaving a considerable part of the school population unprovided for. In Boston 25 per cent. of the school population attend private schools and are subject to medical inspection under Board of Health control. Under School Committee control this work would have to be abandoned.

Medical inspection of schools has proven its value. The divided responsibility of nurses and physicians working under the direction of separate departments is unfortunate and illogical. The work should be placed in charge of Health Departments because it is a medical problem rather than an educational one. The energies of the School Committee can then be directed in providing non-medical treatment for defective pupils who are not able through infirmity to keep up with the average normal pupil. Notable opportunities for such activities are afforded in providing special classes for the mentally deficient; for the deaf and dumb; for the blind; for crippled children, and for the tuberculous.

BENEFITS TO BE DERIVED FROM REGULAR MEDICAL INSPECTION OF OUR SCHOOLS

BY

G. M. CASE

Of all the great problems in science, none exceed in importance those embodied in what, for convenience, we call "preventative medicine." These problems touch upon every phase of sanitary and hygienic science, with their allied agencies.

We have come to know that in order to attain *anything* approaching the ideal healthy individual, both mental and physical, we *must have* supervision and control of children during their school life. Out of this has grown a new specialization, viz, medical inspection of schools, which assumes the care and supervision of the child during the tedious and critical process of education.

Until very recently (a few years perhaps) the backward school child was the most *misunderstood* and *mistreated* product of the human race. Usually, children of this class have lingered in the lower grades or dropped to still lower grades, and have been disgraced by being classed as feeble-minded children. This seemingly has satisfied the parent and school authorities and the dull, so-called stupid child has been a part of every school *much* to the annoyance of the teacher. Where medical inspection of schools has been adopted, it has been found, in a *large percentage of cases* that the child is not stupid because of some inherent lack of brain development or heredity but because of defective eyes or partial deafness, or functional inactivity of the brain on account of obstructions in the upper air passages, causing mouth-breathing, impairment of general health, etc.

We have come to learn, in the *young* especially, that functional disease *precedes* and *causes* structural abnormalism; in other words abnormal physiology degenerates into pathologic anatomy, and curable neuroses, neglected in the young, lay the foundation for serious disturbances later in life which baffle the skill of the most learned of our profession.

Now, and for many years past, a constant series of books and reports of reputable physicians have been appearing, all pointing out that malfunction of the eyes, the most *valuable* of our *sense* organs, is a *great* source of disease, not only of the eyes themselves, but of the general system—and especially of the nervous system.

Experience teaches us that the higher civilization multiplies enormously the causes of eye-strain, and as a result nervous and mental

diseases are rapidly increasing with a frightful growth in the general morbidity rates. This condition is in exact proportion to the number of hours of study per week demanded of school children. According to a bulletin of 1912 the U. S. Bureau of Education says that 25% or about 5,000,000 of the school children of our country have defective vision, and that about 75% need attention to-day for physical defects which are prejudicial to health, and which are partially or *completely* remediable. That the school child has been woefully neglected in the past, is a certain fact that we have learned to recognize, and it is high time that the school authorities recognize this fact and enact more radical measures for the physical welfare of the school child. What has been wanted all the time is a workmanlike testing the matter out along rational lines, to use a slang phrase, "be on the job" all the while. In our cities and county districts there have been (from time to time) spasmodic efforts made to examine school children and give treatment to those suffering from abnormal conditions, but from lack of coöperation on the part of teachers, parents and school authorities nothing worthy our great country has been accomplished.

The day has passed when a printed notice tacked up somewhere or sent to parents informing them of defects in their child is of any use, or fulfills the duty of our health officials. Every notice should carry with it *authority* and *compulsion*. One of the most pathetic evidences of human credulity is the fact that from time immemorial men are heedless regarding mere recommendations regarding their *own* and *children's* health.

Even in this enlightened age vaccination was almost a dead letter until it was made compulsory. Even now some of our most intelligent citizens would go to almost any extreme to avoid complying with the law. Of course smallpox is a serious menace to public health, but comparatively speaking it is of less importance than many other conditions we find in our schools.

I might mention the infectious diseases: Measles, diphtheria, scarlet fever, whooping cough, etc., which can be recognized in early stages only by the physician; and serious outbreaks are occurring in our schools from lack of their early recognition. As one writer says, "The statistical evidence in support of school attendance being responsible for the spread of infection is overwhelming. I am aware there is an honest difference of opinion regarding infectious disease and school life, at any rate the public should receive more education along these lines. To do this is not so easy as it sounds; for it includes the difficult task of *educating* the *educated* as well as the *ignorant*. It demands great unselfishness of the practicing physician and imposes radical readjustment of our educational system."

This can be done and is being done in many of our cities with most excellent results. Our authoritative school boards, through legislative action, now compel all children, between certain ages, regularly to attend school practically three-quarters of the year. Unless this is complied with the delinquent officer must have some valid excuse from the parent or family physician or both. This law has proven to be a most just and commendatory measure, notwithstanding the objections made by many as to its feasibility. Recent developments in school hygiene, etc., have demonstrated the incompleteness of the law, for, if the state has had enactment of laws compelling the attendance at school for the education of the child, not merely for the child's sake, but as a measure of self-protection it is *also* bound to take cognizance of its *physical* welfare.

If the state had gone a step farther and made medical inspection of our schools compulsory, how much better it would have been for all concerned; for we medical men (and for that matter) most teachers know, that quite a large per cent. of the children in our schools need to have their bodies *treated* far more than to have their minds *trained*.

In fact, it is impossible to make much headway in training such children's minds until their physical condition is bettered. Every teacher encounters such a class of school children. They cannot make their grades, are always behind in their studies, cannot apply themselves, and are, many times, ostracized and designated stupid. Nine times out of ten these children need medical attention. Perhaps their eyes are wrong, or they may be suffering from impaired hearing, or their mental faculties are dulled from obstructions in the upper air passages. Also, many of this class are improperly nourished, anaemic; may be suffering from digestive disorders or even incipient tuberculosis or mild chorea, that has escaped the attention of parent, or even if the parents *do know* the child is half sick they send them to school to get them out of the way, or from fear of the "delinquent officer."

The benefits to be derived from medical inspection in our schools, are so apparent that it is useless to mention many of them. The more prominent are: First, prevention of disease. Medical examination of the school children would bring to light many physical abnormalities which, if corrected, would control the whole child life, and to some extent the future destiny of the community at large, for *healthy* children are quite apt to grow up to be strong and useful men and women.

Otologists both here and abroad are of the belief (based upon statistics and experience) that at *least* 75 per cent. of cases of deafness are curable; or, in other words, are "preventable" if taken at the proper time, viz: early life. This fact is worth considering from an economic point of view. I think you medical men will subscribe to the truth of the statement, when I say that at least one in five of school children will be found

to be mouth-breathers, because of nasal disorders or large tonsils or adenoid growths. As these conditions are known to be the direct contributing cause of deafness, discharging ears, and predisposing to nervous trouble, and through infection to rheumatism and even tuberculosis, it brings immense responsibilities upon the Board of Education and the medical fraternity alike.

The public have become fairly well informed as to the importance of regular examination of the eye-sight of the school children, and in our city schools an attempt has been made to bring this about. Each teacher is supposed to be supplied with a "Snellen" chart (but generally only one chart in whole school) and each pupil's visual power is supposed to be obtained and recorded, and if distinctly below the normal, the parents of the child or the sanitary officer are notified that an oculist should be consulted. Provision is made whereby the poor may have the services of the oculist gratuitously, a very nominal charge made for glasses furnished, which are paid for by the Board of Education.

Not being compulsory, notices are ignored and consequently only a very small per cent. of these defective eye-sight children ever reach an oculist.

It is a conservative estimate that one in three children *have trouble* either with their eyes, nose or throat that need attention; and it is the conviction of teachers, and the medical profession, that *something* should be done to bring this about, if we hope to obtain the best possible conditions, physically and mentally, for the present rising generation. The above assertions that I have made might give you the impression that I believed that all that is required is medical supervision of the schools by a specialist—*far from it*. The best benefits can only be accomplished by union of the two forces, viz: There should be an internist and specialist for each school. Of the two I am convinced that the physician's duties are of equal if not more importance than the specialist, certainly more diversified. He should guard the school child from the evil effects of a good, *but many times*, abused compulsory educational law. Beyond doubt, many children are kept, from fear of the authorities, in school who from physical or nervous defects have no right to be there and are receiving little but physical injury and mental discouragement by their school life. Others, classed as precocious children, are pushed ahead, making grades in an incredulous short time, simply because the teacher is over-zealous and the parents are desirous of demonstrating the extraordinary ability of their child, and from indoor confinement and over-study are driven into inevitable nervous ruin, and later mental incapacity. Compulsory education in our schools, at the expense of the pupil's health, should be discouraged, and the state

should be bound to take cognizance of the physical welfare of its school children first, last and all the time.

Another reason for medical inspection of our schools is found in the extension of our school system.

In former years the schools were widely scattered and irregularly attended, the terms were short, and there seemed no special need of hygienic attention. A half century ago we were a set of rural communities, now we are an urban nation, over 35 per cent. live in cities, and many of the residents of the country send their children to the city schools to be educated. This fact has rendered essential greater attention to water supply, problems of light and air in public school buildings, the isolation of contagious diseases, and a thousand other matters of greater or less importance, but apparently less needed in a rural community.

Incidentally I might mention it is a sad fact that the inhabitants of the country, school authorities or otherwise, willfully ignore, or are ignorant of the simplest sanitary and hygienic measures.

It is right here in these country schools that the health of the children is *shamefully* neglected. Fresh air is *so* free and plentiful that its value is not realized, and it is safe to say that the majority of all inhabitants, intelligent or otherwise, sleep in stuffy bedrooms and live in ill-ventilated rooms, thereby inviting catarrhal troubles and various other ailments. Adenoid growths and hypertrophied tonsils are alarmingly common in our rural districts. The "*schools are full of them*," is what a sanitary inspector told me the other day. She brought one of them to me for operation, and said that there were three more in the same family that ought to be operated on, but the parents would consent to bringing only the one that is getting deaf. They thought the others would outgrow it. What folly, because the damage is done long before the growths atrophy. How to arouse the apathy of the public on a "good-health crusade" is one of the difficulties of the day. It never will be done until the state makes it compulsory, as vaccination, school attendance, etc. Says Dr. Wm. H. Allen, Secretary of the Bureau of Municipal Research, "The obligation between the State and the child is a reciprocal one, and when the State for its own protection compels a child to go to school, it pledges itself not to injure itself by injuring the child." Again, to quote from the British Board of Education: "Medical inspection is founded on the close connection which exists between the physical and mental conditions of the children, *and the whole of education*. It seeks to secure ultimately, *for every child, normal or defective*, conditions of life compatible with that *full and effective* development of its organic functions, its special senses and its mental powers, which constitute a true education."

That this medical inspection of our schools has come to stay is conclusively shown by the statements below. Twelve states have taken legislative action, either compulsory or permissive. Of these the best progress has been made in the North Atlantic and Western division of States, where 60 per cent. of the cities have taken it up. The poorest showing is made in the Southern States, where only about 20 to 30 per cent. of the cities have medical inspection of their schools. In 75 per cent. of the cities the work is prosecuted under the Board of Education.

Of 758 cities tabulated, 337 have systems of medical inspection. 301 have inspection for the detection of contagious diseases. 167 cities have physical examination of school children, most of them not only when they enter, but at stated periods. In 187 cities vision and hearing tests are conducted by the doctor. In 399 cities vision and hearing tests are conducted by teachers. There are 1,194 school physicians employed as permanent members of educational forces. 371 nurses are employed in 76 cities. 48 cities have school dentists. About 25 cities are supporting open air schools, and according to Dr. Straw of New Hampshire, from whose article the above statistics are taken, no failure has been recorded. He says the children gain in weight, work less, play more, and progress faster than those in ordinary schools. He says 97 cities give special care and instruction to all school children found predisposed to or are already infected with tuberculosis and provide out-door schools for them.

New York City last year made over and equipped twenty school rooms, in regular buildings, for the better care of the sick and well school children, besides establishing a number of independent schools for out-door instruction.

That progress is being made in endeavoring to better the physical as well as the mental condition of our school children is in evidence from all sources. Only a few years ago medical inspection meant a hurried looking over of school children to discover measles, scarlet fever, diphtheria, etc. Now most of the cities look more for defective vision or anaemia, incipient tuberculosis, etc. Not long since adenoid growths were almost unheard of by school teachers. Now 171 cities make examinations for adenoids and hypertrophied or diseased tonsils, for they are known to be a more serious menace to a healthy development and school progress than most anything else.

It is apparent from all standpoints that medical inspection of our schools is a wise and much needed condition, and is well worth our serious consideration. But how to bring it about is the perplexing problem. That the teachers should be required to make the examinations is an injustice for two main reasons; first, it adds to their already overburdensome responsibilities; and, second, since the tests, to be

of any real value, require technical skill. In many of the cities a qualified school nurse is employed to supplement the work of the physician, and has been found a most excellent expedient.

Properly to carry out school inspection in all of its many details requires a broad and practical knowledge of hygiene, which includes lighting, heating, ventilation, drainage, disinfection, as well as judgment of the physical endurance of the child from a medical standpoint. Specialists must examine into the visual power of the child and also determine whether deafness exists, and its cause. If the child is backward in his or her studies, it certainly should receive especial attention from both specialist and physician. Both Philadelphia and Chicago have a private pathological clinic for such children, and its duty is to inquire into nervous difficulties, hereditary troubles or other deep-seated defects. The following is a list of questions and answers indicative of the extent and purpose of the work of medical inspection of schools. These have been adopted as a standard by some cities:

1. Who and what should be physically examined? Answer: All children, normal students, teachers, janitor, buildings, grounds, in all school districts, public, parochial, private, rural and urban.

2. How often? Answer: At least once a year.

3. How many children need treatment? Answer: Seven out of ten; three out of ten for eyes; two out of ten for breathing troubles; seven out of ten for bad teeth.

4. What is the penalty for physical defect? Answer: Retardation, discouragement, dropping out of school, annual waste estimated up into the millions.

5. Does examination lead to treatment? Answer: Yes, in nine cases out of ten, if the parents understand properly.

6. How should medical inspection be administered? Answer: As now only about one-quarter of the cities are under the Board of Health, and three-quarters are under the Board of Education, it would seem that the latter should control it.

7. Should the work be done by the principals and teachers, properly qualified nurses or by physicians? Answer: The most excellent expedient has been to employ nurses to supplement the work of the physician. The principals of the schools with their corps of teachers are more than willing to lend their assistance and their usefulness too can hardly be over-estimated as an aid to this work.

EXAMINATION OF THE VISION, HEARING AND NASAL RESPIRATION OF THE SCHOOL CHILDREN BY THE TEACHERS OF NEW YORK STATE

BY

WILLIAM A. HOWE

HERBERT DANA SCHENCK

In 1902 the New York State Department of Health prepared test cards and blanks for the examination of the vision of the school children of the State. Through lack of funds these were not sent out, but the schools were notified that they could be had upon application. This volunteer system produced no results.

In September, 1907, after a consultation with the State Department of Education, the examination of the vision, hearing and nasal respiratory function was instituted in 447 incorporated villages, having approximately 4,181 teachers and about 60,000 pupils.

We were advised by the Department of Education that the schools in these villages were better organized and the supervision was such that this work could be better undertaken as a matter of experiment and education than it could in the rural districts. We were also told that the cities of the state were most of them undertaking some form of medical inspection, in which many of them included the examination of the eyes and ears.

By spending some time and money in "follow up" work, we managed during the school year beginning September, 1907, to have examinations made in 423 of these villages, which varied in population from a hamlet with less than a hundred school children, to the village of Saratoga Springs, with a population greater than many of our cities.

In the succeeding years, because of the belief of many of the school authorities that one examination ought to suffice for a child's lifetime, fewer of the villages have taken part in these annual examinations. It was thought that when the district superintendents who had been trained as teachers, superseded the school commissioners and took charge of the rural and village schools in January, 1912, that through their supervision the examination could be carried into the country districts as well as be made more thorough in the incorporated villages. During the last school year this extension was made, and, while the reports were very good from the rural schools, the villages that held the examinations were fewer than in previous years.

The examination has always been a voluntary matter on the part of the schools, and it was so stated in the department letter to the school authorities. During the first two or three years we did not have the moral support of the Department of Education, but in recent years we have secured their coöperation. Could these examinations from the first have had the strong backing of both the Department of Health and the Department of Education, I am sure the moral force would have been sufficient to have converted many wavering Boards of Education to feeling the necessity of having these tests made. As it was, a few of the principals and superintendents said that it was being done simply for the purpose of gathering statistics and no more of these were needed; others, that they had no time for such foolishness. One principal confessed that the cards and blanks had been received and had been thrown in the corner unopened, and he proposed to let them stay there.

By dealing with the Boards of Education rather than with the superintendents and principals, we found better coöperation, and results were obtained.

The instructions sent to the teachers and the report blanks were prepared after a careful study of those used in the cities of this State and of neighboring states where these examinations had been held for a number of years, notably Connecticut, which had had the eyes of its school children frequently examined since 1899. The first directions prepared for the teachers were found not to be minute enough to secure uniformity in the examinations, the reports failing to show an intelligent appreciation of the methods of making these tests. They have since been revised, and now in a great majority of instances, if there is any supervision at all, fairly good reports are turned in.

The following were the instructions sent out in 1907, 1908 and 1909:

NEW YORK
STATE DEPARTMENT OF HEALTH
ALBANY

TEACHERS' INSTRUCTIONS FOR THE EXAMINATION OF THE EYES AND EARS OF
SCHOOL CHILDREN

Eyes

1. *Exceptions.* Children under 7 years need *not* be examined.
- 2-3. *General Directions.* Children wearing glasses should be tested with their glasses properly adjusted to their faces.
Children should be examined singly and privately.

4. *Abnormal Conditions.* Ascertain whether the child habitually suffers from inflamed lids or eyes or after study has weariness or pain in eyes or head or is suffering from squint (eyes crossed).

5. *Test for Normal Vision.* Find whether the vision is normal by the large charts. Do not expose the charts except when they are in use as familiarity leads to memorizing the letters.

6. *Testing Distant Vision.* The chart should have a *good side* illumination and not be hung in range of a window which will dazzle the eyes. It should be on a level with the head and at a *measured* distance of 20 feet from the child who should sit facing it. Examine each eye separately by holding a card or other screen close in front of one eye while the other is examined, but do not have the test made with one eye closed by pressure or otherwise. Test the right eye first by having the letters named in order from the top downward. For the left eye have the letters named from right to left to avoid repetition from memory.

7. *Inability to Name Letters.* Where the child cannot name the individual letters although able to read, the chart of figures may be used. It may also be used as a control test. If the child does not know figures or letters use the chart of inverted E's, asking the child to tell by a movement of the hand the side on which there is an opening in the E's in the different lines, *i. e.*, up, down, right or left.

8. *Memorizing.* If it is suspected that the answers are being made from memory a hole about one and one-half inches may be cut in a narrow strip of cardboard so as to allow only one or two letters to show through the hole, and by skipping around rapidly it is easy to break up the memorizing of the letters.

9. *Recording Distant Vision.* The lines on the three large charts are numbered 200, 100, 70, 50, 40, 30, 20. These indicate the distance the respective letters should be read by the normal eye. The record is made by a fraction, of which the numerator represents the distance of the chart from the child, and the denominator the lowest line he can correctly read. Thus if at 20 feet he reads the lowest line the vision is $20/20$ or normal. If he only reads the line above, the vision is $20/30$ or $\frac{2}{3}$ the normal. If he cannot read the largest letter he must go *slowly* toward the chart until he can. The distance he is from the chart when he can read the largest letter will be the numerator and 200 the denominator. Thus, if he could not tell the letter until he is 10 feet from the chart his vision will be $10/200$ or $1/20$ the normal.

10. *Testing Near Vision or Focusing Power.* The eyes should also be tested at the near point and separately as with the large chart, the scholar being seated with his back toward the light and with the small chart well lighted. Begin at 18 inches and steadily bring the chart nearer and nearer while the scholar continues to read aloud. When he can read no further measure the distance from his eye to the chart. If the child has difficulty in reading the chart he can spell the words, and the test will be determined by his failure to pronounce the letters correctly.

11. *Recording Distant and Near Vision.* The fractions $20/20$, $20/40$, $10/200$, etc., will record the distant vision (20 feet) of each eye. Reads right eye — inches up to — inches; reads left eye — inches up to — inches will record the focusing power of each eye; as R.E. = 16 up to 4 in; L.E. = 15 up to $3\frac{1}{2}$ in.

Ears

1. *Exceptions.* All children should be examined.

2. *Directions.* Children should be examined singly and privately.

3. *Abnormal Conditions.* Ascertain whether the child has frequent earaches, has pus or a foul odor proceeding from either ear, suffers from frequent "colds in the head," is subject to a constant catarrhal discharge from the nose or throat or is a mouth-breather.

4. *Testing Hearing.* Seat the child facing you near one end of a *quiet* room with the windows *closed* and begin the test of the hearing at a *measured* distance of 25 feet. The test is made by having the left ear tightly closed with the finger while you observe the ability of the child to repeat your *moderate* whispers of numbers between 21 and 99 inclusive, avoiding those with cyphers; as 75, 55, 37, 22, etc. Test the left ear with the right tightly closed. Avoid having a wall behind you to act as a sounding board. The figures should have as nearly equal emphasis as possible, and the distance at which the child correctly repeats a series of three numbers gives his hearing distance for that ear. No further test is necessary if the child hears the numbers perfectly with each ear. If this test shows a slight defect of either ear, further tests may be made by observing how the child hears the tick of an ordinary watch which should be heard normally at a distance of not less than three feet.

5. *Recording Hearing.* The hearing is recorded by a fraction of which the numerator represents the distance you are from the child and the denominator is 25. If he repeats the numbers correctly at 25 feet his hearing is $25/25$ or normal. If he only repeats the numbers correctly when you are at 20 feet it is $20/25$ or 4.5 the normal, and at 12 feet $12/25$, etc.

Cards and Reports

1. *Time.* These examinations should be made *annually* in October, and after the mid-winter examinations in the case of new pupils.

2. *Charts.* All the charts should be kept without rolling or being folded, in a clean dark place to prevent the yellowing of the paper.

3. *Reports to Parents or Guardians.* (a.) *Eye Conditions.* Send at once a properly filled blank to the parent or guardian of all children whose vision is *less* than $20/20$ in either eye. Do not fail to report cases where the vision is $20/20$ if the child is backward in school work, suffers from any abnormal condition of the lids, inflamed eyes, has a discharge from either eye or *frequent headaches*.

(b.) *Ear Conditions.* Report all cases where the hearing with either ear falls below normal, or the child suffers from any of the conditions mentioned under "*Abnormal Conditions—Ears.*"

4. *Health Department Reports.* Mail to the State Department of Health a report giving the name and age of all children examined. Where the distant vision is $20/20$, the focusing power 18 inches up to 4 inches, and there are no abnormal conditions of the eye or lids, or headaches; and where the hearing is normal in each ear, without any other abnormal conditions leave the spaces opposite such names vacant.

The vision and hearing are recorded in the proper spaces for each by fractions as explained above. All abnormal conditions of the eyes, lids, ears, nose, throat, and headaches are to be recorded by proper abbreviations under the respective headings.

This report must be filed with the Department within 10 days.

EUGENE H. PORTER, M.D.
Commissioner of Health.

The Revised Instructions in use since 1910 are as follows:

TEACHERS *MUST STUDY* THESE DIRECTIONS CAREFULLY BEFORE BEGINNING
EXAMINATION

NEW YORK

STATE DEPARTMENT OF HEALTH

ALBANY

TEACHERS' INSTRUCTIONS FOR THE EXAMINATION OF THE EYES, EARS AND TEETH OF
SCHOOL CHILDREN

Eyes

1-2-3-4. *General Directions.* The ages of all pupils examined should be recorded in the report. Children under 7 years need *not* be examined.

Pupils under the care of an oculist should have their vision recorded and other defects noted.

Children wearing glasses should be tested with the glasses properly adjusted to their faces.

Children should be examined singly and privately, that is, each child should be taken behind a screen or in a separate room for his examination.

5. *Test for Normal Vision.* Find whether the vision is normal by the large and small charts. Do not expose the charts except when they are in use as familiarity leads to memorizing the letters.

6. *Testing Distant Vision.* The examination should be made between the hours of 9 and 3. The light on dark days is too poor to make the examination after 3 o'clock.

The large chart should have a *good side illumination* and not be hung with a window behind it which will dazzle the eyes of the children. It should be on a level with the head and at a measured distance of 20 feet from the child who should sit facing it. Cover the left eye with a card held firmly against the nose while the right is examined, but do not have the test made with one eye closed by pressure or the sight excluded in any other way except by the card held in front of it. Test the right eye first by having the letters in each line named aloud from left to right from the top downward and note the lowest line he reads correctly. Then cover the right eye and have him name the letters from *right to left*, or backwards, to avoid repetition from memory. Record the lowest line he reads correctly.

7. *Inability to Name Letters.* Where the child cannot name the individual letters although able to read, the chart of figures may be used. It may also be used as a control test. If the child does not know figures or letters use the chart of inverted E's, asking the child to tell by a movement of the hand the side on which there is an opening in the E's in the different lines, *i. e.*, up, down, to the right or to the left.

8. *Memorizing.* If it is suspected that the answers are being made from memory a hole about one and one-half inches square may be cut in a narrow strip of cardboard so as to allow only one or two letters to show through the hole, and by skipping around rapidly it is easy to break up the memorizing of the letters. A sample card is inclosed.

9. *Recording Distant Vision.* The lines on the 3 large charts are numbered 200, 100, 70, 50, 40, 30, 20. These indicate the number of feet the respective letters and figures should be read by the normal eye. The record is made by a fraction, of which the numerator represents the number of feet the chart is from the child, and the denominator the number over the lowest line he can correctly read. Thus if at 20 feet he reads the lowest line the vision is 20/20 or normal. If he only reads the line above, the vision is 20/30, etc.

The child should *not* go nearer to the chart than 20 feet unless he fails to read the largest letter at the top. If he fails to read the top letter he should go up foot by foot until he can. The number of feet he is from the chart when he can read the largest letter will then be the numerator and 200 the denominator. Thus, if he can not tell the letter until he is 10 feet from the chart his vision will be 10/200.

The fractions 20/20, 20/30, 20/40, 20/50, 20/70, 20/100, 20/200, 12/200, 8/200, etc., should be used to record the distant vision, that is, the vision measured with the large charts. Remember that the numerator is the number of feet the child is from the chart and the denominator is the lowest line of letters he can correctly read.

If the child reads 4 of the 8 letters in the lowest line his vision should be recorded as normal.

10. *Testing Near Vision or Focusing Power.* The eyes should also be tested for near vision or focusing power with the small chart. The scholar should be seated with his back toward the light and with the chart well lighted. Cover the left eye with a card as in the test for distant vision. Hold the chart at a measured distance of 18 inches from the face and steadily bring it nearer and nearer while the child continues to read aloud. When he can read to further note the number of inches from his face to the chart. Then cover the right eye with the card and hold the chart at 18 inches from his face as before and begin the test. Record the nearest point at which he reads as with the right eye. If the child has difficulty in reading the chart he can spell four or five different words, and the test will be determined by the farthest and nearest points he names the letters correctly.

If the child cannot begin to read the chart at 18 inches bring it slowly nearer until he can begin and then record that distance as his far point or the numerator in the fraction recording focusing power. Unless the child is a very rapid reader the first paragraph or less correctly read while you are moving the chart from 18 inches toward his face, will be the test for the right eye. Use the second paragraph or the second or third selections for the left eye.

11. *Recording Near Vision or Focusing Power.* The near vision or focusing power is recorded by a fraction whose numerator is the greatest distance from the child's face at which he reads the small chart or pronounces the letters in four or five different words, and the denominator is the point nearest his face at which the child can read or spell correctly these letters. For example—18/4, 14/8, 16/5, 17/7, etc., means that the child can read the chart at 18, 14, 16 and 17 inches from his face and as near as 4, 8, 5 and 7 inches. Children between 7 and 20 years should have a focusing power as far as 16 inches and less than 4 inches from the face. It should be recorded as normal if the farthest point is at least 14 inches and the nearest point 8 from their faces.

12. *Abnormal Conditions.* Ascertain by observation whether the child habitually suffers from inflamed lids or eye or after study has weariness or pain in eyes or head or is suffering from squint (eyes crossed on "wall-eyed").

Do not depend upon the child for this information. Find it out by looking at the child's eyes, and observing his condition in school.

Ears

1. *Exceptions.* NOTE.—All school children should have their hearing and the condition of their mouth and nose examined, even those younger than 7 years.

2. *Directions.* Children should be examined singly and privately, that is, each child should be taken into a room separately or examined alone behind a screen.

3. *Testing Hearing.* Seat the child with the right ear toward you near one end of a quiet room with the windows closed, and begin the test of the hearing at a *measured* distance of 25 feet. It will greatly aid you to mark off the floor with parallel lines one foot apart. The child should sit over the first mark. The test is made by having the left ear tightly closed with the finger while you observe the ability of the child to repeat your *moderate* whispers of numbers between 21 and 99 inclusive, avoiding those with cyphers; as 75, 55, 37, 22, etc. Then have the child turn the left ear toward you and with the right ear tightly closed with his finger, repeat the whispered numbers. If he repeats correctly at 25 feet a series of 5 numbers with each ear turned toward you, his hearing is recorded as 25/25 or normal. If he fails to repeat the numbers at 25 feet, you should go forward foot by foot until he can repeat a series of 5 numbers correctly. Avoid having a wall behind you to act as a sounding board. The figures should have as nearly equal emphasis as possible.

Where it is difficult to get some of the youngest children to repeat the numbers, a fair idea of their hearing may be had by placing the child at 25 feet with his back towards you. Close first his left ear and ask him in a whisper to make some unusual movement of his hand. Then close the right ear and test the left in the same way. Record the number of feet from the child, for each ear, at which he makes the movement accord with your whispered directions.

No further test is necessary if the child hears the numbers perfectly with each ear.

If the child shows deafness for the whispered numbers a further test may be made by observing how the child hears the tick of an ordinary watch which should be heard by a normal ear at a distance of not less than three feet. The test should be made with each ear closed and turned toward you while the other is tested as for the whispered numbers, and the eyes should also be closed so that the child cannot see where the watch is held.

4. *Recording Hearing.* The hearing is recorded by a fraction of which the numerator represents the distance you are from the child and the denominator is 25. If he repeats the numbers correctly at 25 feet his hearing is 25/25 or normal. If he only repeats the numbers correctly when you are at 20 feet it is 20/25, at 12 feet 12/25, at 10 feet 10/25, etc.

5. *Abnormal Conditions.* Ascertain whether the child has frequent earaches, has pus or a foul odor proceeding from either ear, suffers from frequent "colds in the head," is subject to a constant catarrhal discharge from the nose or throat or is a mouth-breather.

Do not question the child to find out these conditions, but depend on what you have observed during the school work.

Teeth.

The teeth of each child should be carefully examined to determine their general condition, and which are decayed. Each child should be questioned as to whether or not a tooth brush is used daily or more often, as to the presence of toothache, and as to its ability to properly masticate food. Each child should be impressed with the

importance of proper care of the teeth and the importance of eating slowly and thoroughly chewing its food.

Such teeth as are found decayed should be indicated on the accompanying dental chart, a copy of which should be kept at the school for future reference, and a record thereof included on the report card to be forwarded to the State Department of Health.

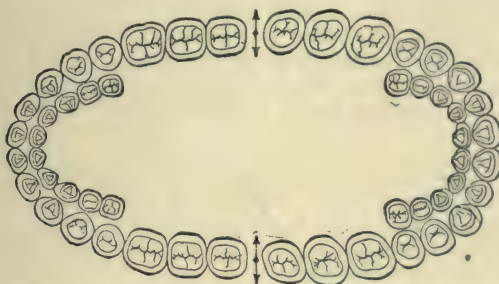


Figure 1

Cards and Reports

1. *Time.* These examinations should be made *annually*, at the beginning of the school year and after the mid-winter examinations in the case of new pupils.

2. *Charts.* All the charts should be kept without rolling or being folded, in a clean dark place to prevent the yellowing of the paper. When they are damaged or yellow a requisition for a new set should be made on the State Department of Health.

3. *Reports to Parents or Guardians.* (a.) *Eye Conditions.* Send at once a properly filled blank to the parent or guardian of all children whose vision is *less* than 20/20, that is, unable to name correctly at least 4 of the letters in the bottom line of the large chart with either eye; or where the focusing power is not as far as 14 inches from the face and nearer than 8 inches. The child may read at a greater distance than 14 and nearer than 8 inches and still be normal. Do not fail to report cases to parents where the vision is 20/20 if the child is backward in school work, suffers from any abnormal condition of the lids, inflamed eyes, has a discharge from either eye, or either eye converges or diverges, or there are frequent headaches. Do not notify parents whose children are under the care of a physician, for any of the above defects.

(b.) *Ear Conditions.* Report all the cases where the child fails to hear at least 20/25 with either ear, or the child suffers from earaches, discharge, a foul odor from either ear, from frequent colds in the head, is subject to a constant catarrhal discharge from the nose or throat or is a mouth-breather.

Teeth. When the teeth of the child are found decayed such fact should be communicated to the parent or guardian, advising that such should be promptly remedied.

Tonsils. Should the tonsils be found sufficiently enlarged to interfere with the passage of the throat, the parent or guardian should be so informed.

4. *Reports to State Department of Health.* Fill out and mail to the State Department of Health a report, giving the name and age of all children examined. Only the names of the children examined should be put on the report blank. *Do not include all*

names on the register. The report blank should have the children arranged on it as nearly as possible in the following order: those older than 15 should be examined first and entered first on the report blank; those between 15 and 12 should next be examined and recorded; then those between 12 and 9; and finally those between 9 and 7. This is necessary for the tabulation work of the Department.

The vision and hearing are recorded in the proper spaces for each by fractions as explained above. All abnormal conditions of the eyes, lids, ears, nose, teeth, and headaches are to be recorded by proper abbreviations under the respective headings. These abbreviations are given on the sample report blank enclosed.

Record under remarks those children who are behind their grade, are dull, are truants, are inclined to be incorrigible, are under size, pale, or who show a lack of proper nourishment.

Record on the blanks only the defects of sight or hearing or abnormal conditions. (See section 12, Eyes, and section 5, Ears.) Children with normal eyes, ears, nose, teeth, and with free breathing space should have only their names and ages on the blank. Record such normal children on the report blank as are James Hughes and John Grant, numbers 15 and 16 on the sample report blank.

If you do this you will save yourself much unnecessary clerical work and greatly lessen the work of the Department.

Study the sample report blank and make your report like it.

This report must be filed with the Department within ten days after the examinations are made.

EUGENE H. PORTER, M.D.,

Commissioner of Health.

With these is sent out the preceding sample report blank, filled out in accordance with the instructions. The result of these more minute instructions to the teachers has given much better reports which give evidence that the examinations were carried out in much better form and more satisfactory work done in making the tests.

The Consulting Ophthalmologist during the first two or three years the examinations were held, attended a number of teachers' institutes in different parts of the State and demonstrated the method of examining the hearing and vision. A lecture was given to the institute conductors and a letter of instruction was sent, requesting them to make the demonstration of this test a part of every teachers' institute.

The first two or three years the reports were so imperfect that it was not deemed profitable to compile the results of the examinations. The work of the past year has, however, been tabulated, but lacks some details that future reports will have to make them available in judging results.

Of the 57 counties in the State outside of Greater New York, all but Putnam and Rockland sent in reports. The average number per county was 2,265; the largest number in any one was 7,001 in St. Lawrence; the smallest 151 in Westchester. Of the 207 district superintendents, 171 collected reports from their 15,800 teachers and forwarded them to the department. Only a few sent in reports from all the schools in their

SAMPLE REPORT BLANK

VILLAGE, *Greene*.

DISTRICT 10.

SCHOOL, *Grammar*.

GRADE 6

No.	NAME	Age	DISTANT VISION (20 feet)		FOCUSING POWER (Inches)		EYES In-flamed dis-charg-ing.	LIDS In-flamed scaly, swollen	EYES Pain or It-tiged after use	HEAD-ACHE Daily Weekly	HEARING		EAR Fre-quent it-acles	EAR Dis-charg-ing odor	NOSE Fre-quent Colds Catarrh	THROAT Mouth breathr	Cases Re-ported to parents or guardians	GENERAL HEALTH
			R. E.	L. E.	R. E.	L. E.					R. Ear	L. Ear						
1	Adam Smith..	9	20/40		15-3½				Fat. dull pain	Bi-wk. Almost daily							Y	Teeth defective
2	James Crosby..	12					Inf.										Y	
3	Thos. Murphy..	12					Disch.		Fat.								Y	Tuant
4	Edw. Martin..	13		20/50				Sc. Swol.									Y	
5	Wm. Thomas..	13															Y	
6	Theo. Jones..	13															Y	
7	George Porter..	17	20/70				Sq.				15/25						Y	Behind grade
8	Smith Fly..	16	20/50	20/30								10/25					Y	
9	Wm. Merritt..	15	20/30		15-7			Inf.	Dull Achs Fat.	Wk. Bi-wk.			Sharp. Occas.	Disch. Offens.	Many		Y	Pale
10	John Proctor...	13										20/25					Y	
11	Matt Arnold..	11															Y	
12	John Milton..	16	20/30	20/40	16-6	13-4				Wk.	6/25		Slight			M. b.	Y	Stunted
13	Thomas Lee...	14															Y	
14	Wm. Parker...	12															Y	
15	James Hughes...	12															Y	
16	John Grant...	11															Y	

Only the names of children who have been examined should appear on the sheet.

All children under 7 years of age whose ears, nose and throat are examined should be entered on a separate sheet.

Normal cases like Nos. 15 and 16 above must have all spaces left blank.

Fill in as above only where the condition is abnormal.

ABBREVIATIONS: Inf.=Infamed; Disch.=Discharge; Sq.=Squint; Sc.=Scaly; Swol.=Swollen; Fat.=Fatigued; Da.=Daily; Wk.=Weekly; Cat.=Catarrh; M.b.=Mouth-breather.

districts. There are 418 incorporated villages of less than 5,000 inhabitants which are under the district superintendents. Of these only 119 made the tests. Besides these there are 10,551 rural school districts, but the examinations were held in only 6,165.

Through the supervision of the district superintendents, however, the reports turned in showed a much better appreciation of the method of making these examinations and reporting them, than has been shown in any of the previous tests. Still there were quite a number of teachers who failed to make the visual test correctly or to make intelligent reports.

The total registration in the public schools last year, exclusive of the 49 cities, was 415,930. This enrollment includes those in the 41 villages of over 5,000 population. Of this number 124,626 or 30 *per cent.* were examined by the teachers.

Of those examined 5,582 or 2.5% were over 16 years of age; 31,651 or 3.3% were between 13 and 15; 43,515 or 3.1% between 10 and 12; 40,945 or 2.8% between 7 and 9; and 2,933 or 2.1% under 7 years of age.

The exact number reported as having some defect of sight, hearing, nasal respiration or the teeth has not been carefully determined but will be about 30%. This, of course, shows a very low average, and demonstrates that much must be done before even an approximation of those having defects of these organs can be made by the teachers, although the *per cent.* of defects reported are about the same as in Vermont where they were 31 + *per cent.* made under a law which has required these tests by the teachers since 1905.

The total number of defective children found in the 124,526 examined was 81,867, being 65.6%.

Of those examined 121,693 were over 7 years of age and had visual as well as all the other tests made. Disregarding the instructions, some of the teachers examined the eyes of the children under 7 years of age. This it is not possible to do accurately with test cards.

The highest percentage of defects, 29.7% was shown in teeth. This percentage is much too low as the Buffalo schools showed a percentage of 46.7% and in the New York City schools an examination of the reports of 23,000 children in 15 schools shows a percentage of about 50 having defective teeth. Next to the teeth the largest number of defects was found in distant vision, 25.8%.

Defects of distant vision remained at almost the same figures between the ages of 7 and those less than 15; but the defects in focusing power drop 3% in those over 15 years of age. Another notable fact, corresponding to those noted in the New York schools, is that the percentage of defects except in those of the eyes, decreases with advancing age. In the departmental reports there was, however, no decrease in those having colds or suffering from catarrh.

The tabulation under the various headings shows that 31,633 or 25.9% have defective distant vision in the right eye, and 31,451 or 25.8% in the left; 15,353 or 12.6% show defects in focusing power in the right and 14,915 or 12.2% in the left. 13,255 or 10.8% were reported to have inflamed, discharging or squinting eyes. No tabulation was made of inflamed, scaly or swollen lids. 18,480 or 15.1% suffered from pain or fatigue after use of the eyes; 17,730 or 14.5% were reported as having daily or weekly headaches. 3,753 or 3% were found to have defects of the right ear, and 3,430 or 2.8% of the left; 9,652 or 7.9% were reported as having frequent earache, and 1,761 or 1.4% have a discharge or odor proceeding from the ear.

17,848 or 14.6% were reported as having frequent colds or nasal catarrh; 13,195 or 10.8% as being mouth-breathers; and 34,020 or 27.9% as having defective teeth; 3,148 cases or 2.5% as not being up to the standard of health of the other children or were truants; 4,590 or 3.7% as backward in their class work; and 627 or about .05% as wearing glasses. In New York City about 14% were found to be mouth-breathers.

36,737 or 30.1% were reported to their parents or guardians as defectives. More children over 16 years of age were tested than in any other period, but 8% less than the average were reported to their parents or guardians.

This tabulation shows that the distant vision *decreases* about 9% between 7 and 16 years of age; discharging ears 29%; those poorly nourished or abnormal 30%. There was also a *decrease* of 28% in frequent earaches between the ages of 13 and 16; and 32% in deafness between the same ages.

There was an *increase* between the ages of 7 and 16 of 13% having inflamed eyes or squinting; of 41% in headaches; 35% in those having frequent colds or nasal catarrh; and 92% in those wearing glasses.

There was an *increase* of 25% between 13 and 16 years of age in the focusing power; 24% in the mouth-breathers and 32% of those having defective teeth.

Curiously enough there was an *increase* between 13 and 16 of 50% in those reported as having frequent earaches. Backward children increased 62% between 7 and 13; and those having defective hearing 16%.

One of the notable things brought out by these tables is the marked increase from .72% in those between 13 and 15 to 2.4% in those over 16 years of age wearing glasses.

The per cent. of defective hearing found was much lower than the defects of sight, nasal respiration or defective teeth. This is probably due to the fact that the whispered voice test was more difficult to apply without some training than the test of the vision or even that for defective teeth.

The experience of the writer, however, is that the whispered voice test is more accurate with children than a test with the watch or any of the various mechanical devices.

A study of the reports of the examinations made under the supervision of the department confirms our belief that the method is one entailing little expense and shows the possibility that when teachers are instructed in the normal schools and in the training schools to make these observations, that they will bring out a very large percentage of the physical defects of vision, hearing, and nasal respiration and teeth. This work should be of the greatest value in elevating the physical equipment and school capacity of the school children of New York State. It will be absolutely necessary, however, to have the work of the teachers supplemented by the services of a district or school nurse for "follow up" work before great practical results can be obtained.

The passage of a compulsory medical inspection law going into effect September 1, 1913, putting its enforcement into the Department of Education, will bring into line many school officers and teachers who have heretofore been hostile or luke-warm toward finding out the physical defects in these special senses.

The defects noted in the New York reports are about the same as those of Massachusetts where defective distant vision has decreased from 22.3% in 1907 to 15.8% in 1910. Defective hearing was found in 6.3% of those examined in 1907 but in only 3.8% in 1910.

In Vermont in 1910 the examination showed 24.8% had a defect of vision; .018% had defective hearing, and .019 defective nasal respiration. In Colorado the per cent. of defectives in 1910 was found to be 45, of which over .64% were reported as having defective vision; 6.6% with defective hearing and 8.8% with defective breathing. In one school in Denver the defects found by the teachers were confirmed by physicians in 98% of the cases reported to the parents for a medical examination.

At the present time the department is absolutely without any data giving the number of children whose parents sought to obtain for their children relief from the physical defects found in the schools. That some did so is assured by the correspondence coming to the department where advice was sought by school authorities as to the best method to secure medical treatment where the parents were unable to do so.

In Massachusetts they have endeavored to get some idea of the results by taking special schools in a number of cities and having the examinations carefully carried out under the supervision of their principals and the results reported, but this, however, only gives a rough approximation of the results.

In order to have these reports produce results and the department find out what it is accomplishing, there should be a *department of examinations formed*. This department should have a head with proper clerical assistants at the capitol. There should be a sufficient number of inspectors and nurses in the field to see that the work is properly done by each teacher, with nurses to go to the homes and persuade parents to have the defects corrected. With accurate reports of such work accompanying the reports of the school examinations, definite results would be accomplished of which the department would have a record, as well as of the added skill of the teachers in making the tests.

THE ADMINISTRATION OF EDUCATIONAL HYGIENE

BY

LOUIS W. RAPEER

I. THE PROBLEM

Looking at one of the big problems of our country in a broad, sociological manner, probably most statesmen and students of public questions will agree with the four following generalizations, namely:

First, there is an enormous amount of individual and national loss in this country due to reasonably preventable and postponable deaths, preventable serious illness, and preventable lowered vital efficiency issuing from a multitude of minor ailments and physical defects.

Second, health knowledge and medical science possessed by the few has advanced far beyond common health practice in the provinces of both personal and public hygiene.

Third, an enormous amount of public health opinion has developed in this country which has found more or less adequate expression in an unusual variety of public health agencies, especially in the public schools, play and playgrounds, medical inspection of school children, open air schools, dental, surgical and medical clinics, better school sanitation, public health education, and all the great variety of new health phases and instruments indicated in the magnificent program of over three hundred addresses at Buffalo this year of the Fourth International Congress on School Hygiene—all these are evidences of the renaissance of the physical conscience of the race and the more or less vague desire to make specialized, private knowledge actual public health practice and living.

Fourth, all these heterogenous elements which have been pushed or pulled into the schools at various times, by various agencies, and for various health and development purposes are, as yet, in a relatively chaotic, uncorrelated, and inefficient condition. They have not been made an organic unity centered upon the solution of the school and national health problem.

In a recent volume entitled "School Health Administration," published by Teachers College, Columbia University (New York City), I have attempted to bring together some of the main results of a three years' investigation of this common problem of school and national

health. In the first two chapters I have roughly computed our national and school health needs and losses. These losses come in the form of preventable and postponable deaths, preventable and curable illness and physical defects, economic losses in the form of lost wages, cost of private and public medical care, the social loss from educating children partly or entirely thru the public schools only to have them die at an early age (85,000 deaths of children five to nineteen years of age each year, about 60,000 of which, according to the most reliable data, are reasonably preventable), a large share of school absence, non-promotion, retardation and elimination, the lowered vital and scholastic efficiency of pupils and teachers due to many minor ailments and physical defects, and many other serious and largely computable losses.

The principal failures and problems of our people set the principal problems of our public schools; and one of the greatest of the permanent problems for the individual and for the community is that of the attainment and maintenance of good *health*. The already established agencies for health control have even now reached such a stage of development that great cities and even nations are showing that the average length of life can be greatly increased, that good health is obtainable and purchasable, and that adequate health education and control during the period of minority can appreciably influence the vitality, health, and happiness of a people. If, however, we could multiply by fifty the scope and the efficiency of all the heterogenous health agencies in this country we should be doing little more than *facing* our health problem, and making, probably, health savings that about balanced our health expenditures. The two big problems before the public school, the chief agency in the whole health movement, are those of (1) actually getting the agencies, and, above all, (2) making them, when obtained, genuinely efficient, energetic, socialized, and scientific instruments for the speedy amelioration of disgraceful health conditions.

The problem of *the efficiency of the public school health agencies* is the problem of this paper. As a part of the investigation above mentioned the writer visited and studied the school health provisions of forty cities. Out of the investigation and previous experience in this field there has gradually come a growing appreciation of what the administration of educational hygiene should be; and a plan for such administration in public school systems is given in the volume mentioned, and in a separate hand-book for school officials, including all who participate in the school health service, and entitled "The Administration of Medical Inspection—A Tentative Standard Plan." In the short time here allotted me, I thought I could do no better than to bring together some of the chief practical recommendations of the study for your consideration and criticism.

II. SOME SUGGESTIONS IN REGARD TO A TENTATIVE STANDARD PLAN FOR THE ADMINISTRATION OF EDUCATIONAL HYGIENE, WITH SPECIAL REFERENCE TO MEDICAL INSPECTION:

I. THE CORRELATION OF SCHOOL HEALTH AGENCIES

The heterogenous and isolated elements of educational hygiene in state and local school systems very much need integration in a single division of each educational department, headed by one who is both a physician, well versed in children's normal and pathological conditions, and also a physical-educator with knowledge and experience in the other divisions of the problem. These divisions, or phases, of educational hygiene we may well agree upon as those first suggested, I think, by Dr. Thomas D. Wood, of Teachers College, Columbia University, but in other terms, namely:

1. *Medical Inspection.*
2. *School Sanitation.*
3. *Physical Education.*
4. *Teaching Hygiene.*
5. *Hygienic Teaching.*

The first term, *Medical Inspection*, is a misnomer for a number of reasons, but chiefly because the school medical service is reaching out far beyond mere inspection. The name is, however, relatively fixed, and the more desirable term, *Medical Supervision*, including both inspection and examination as well as clinical, preventive and follow-up work, will probably have little immediate chance of gaining headway, while *Health Supervision* would not do because this indicates the work of the whole department of hygiene and may, moreover, easily lead to confusion with the local health department of the city.

The last term, *Hygienic Teaching*, is usually termed the "Hygiene of Instruction," but since in this country and abroad this term, instruction, is gradually taking on the narrower meaning of the "pouring-in process" in contrast to real educative *teaching* we naturally avoid it, altho Professor McMurry has not hesitated to use it in his new book on "Elementary School Standards." "The Hygiene of Teaching" is not a good term here since this refers to the hygiene of one of the occupations, teaching, which we include largely under medical supervision. The health of teachers as well as of pupils is the serious concern of this department.

What we need, then, is men who can integrate all these isolated and largely undeveloped elements and center all toward the solution of the school health problem. After some search, I have found that men

THE DIVISIONS OF EDUCATIONAL HYGIENE

Supervisor of Hygiene

MEDICAL SUPERVISION	SCHOOL SANITATION	PHYSICAL EDUCATION	TEACHING HYGIENE	HYGIENIC TEACHING
NURSES AND DOCTORS.	SCHOOL SITES AND ARCHITECTURE.	PLAY AND PLAYGROUNDS.	HEALTH EDUCATION OF TEACHERS.	"THE HYGIENE OF INSTRUCTION."
INSPECTIONS AND ANNUAL EXAMINATIONS	VENTILATION.	PHYSICAL TRAINING AND GYMNASTICS.	ADVISING CHOICE OF BEST HYGIENE TEXTS AND TOPICS.	FATIGUE, OVER-WORK AND UNDER-WORK.
SCHOOL CLINICS.	LIGHTING.	MEDICAL GYMNASTICS.	FORMING PERSONAL HYGIENE HABITS.	THE TYPE OF BOOKS.
HEALTH CENSUS.	HEATING.	ATHLETICS AND LEAGUES.	PUBLIC HYGIENE STUDY AND CO-OPERATION.	THE HYGIENE OF SCHOOL SUBJECTS.
DISCOVERING HEALTH NEEDS.	DRINKING WATER AND FOUNTAINS.	POSTURE AND CORRECTIONAL EXERCISES.	HEALTH EDUCATION OF PARENTS.	INTEREST AND ATTENTION.
CO-OPERATING WITH BOARDS OF HEALTH AND PRIVATE ORGANIZATIONS.	SCHOOL CLEANING.	ASSISTING IN MEDICAL SUPERVISION.	FEEDING, CLOTHING AND SLEEP OF CHILDREN.	INTER-RECI-TATION RE-CREATION.
OPEN AIR SCHOOLS.	VACUUM CLEANERS.	RECREATION.	HOME HYGIENE IN DOMESTIC SCIENCE.	TRANSFORM-ING NEURAS-THENIC AND "CRANKY" TEACHERS.
LIMITING DOCTORS TO EXAMINA-TIONS.	SCHOOL TOILET FACILITIES.	SCHOOL EXCURSIONS AND TRAMPS.	VOCATIONAL HYGIENE IN INDUSTRIAL SUBJECTS.	MOTOR ASPECTS OF TEACHING.
SUPERVISION OF NURSES AND WORK IN CLINICS.	SCHOOL SEATS AND DESKS.	BOY SCOUTS AND CAMP FIRE GIRLS.	TALKS BY DOCTORS, NURSES AND SPECIALISTS.	THE GOSPEL OF WORK.
PSYCHOLO-GISTS, OCULISTS, SURGEONS, DENTISTS, PHYSICIANS.	DECORATION.	GYMNASIUMS AND ATHLETIC FIELDS.	FIRST AID.	THE HYGIENE OF JOY IN SCHOOLS.
SUPERVISION OF SCHOOL FEEDING.	THE STAND-ARD SCHOOL ROOM.	SWIMMING AND BATHING.	SEX HYGIENE.	PREVENTING PHYSICAL DEFECTS AND PATHOLOGICAL CONDITIONS.
SCIENTIFIC STUDIES OF PREVENTION AND CAUSE OF DISEASE.	FIRE-PROOF CONSTRU-C-TION.	POOLS, SHOW-ERS AND BEACHES.	STUDYING COMMUNITY HEALTH PROBLEMS AND METHODS OF IMPROVE-MENT.	SCHOOL PROGRAMS.
CAREFUL RECORDS EMPHASIZING SERIOUS AILMENTS FOUND AND CURED.	HEALTH, REST, AND EMER-GENCY ROOMS.	FOLK DANCING.	DAILY ORAL QUESTION-NAIRE ON HOME HYGIENE: USE OF TOOTH-BRUSH, COFFEE DRINKING, VENTILATION, ETC.	PART-TIME OR WHOLE-TIME.
TRAINING SCHOOL NURSES FOR ALL INSPEC-TION AND EXAMINATION.	PLAYROOMS AND ROOF PLAYGROUNDS.	PHYSICAL EDUCATORS WITH MEDICAL KNOWLEDGE.	HEALTH KNOWLEDGE, HEALTH IDEALS, HEALTH EFFICIENCY.	INFLUENCE OF VACA-TIONS AND HOLIDAYS.
NURSES AS ATTENDANCE OFFICERS.	OPEN WINDOW ROOMS.	HIGH SCHOOL CADETS.		HEALTH IN-DIVIDUALITY.
	SUPERVISION OF JANITORS.	CLASS ROOM GAMES.		HYGIENIC EFFECTS OF DIFFERENT METHODS.
	HYGIENIC CLOAK ROOMS.	PAY FOR SUPERVISING PLAY AFTER SCHOOL AND SATURDAYS.		THE TEACHER AS MEDICAL GUARDIAN.
	DRYING AND WARMING SEATS.	CULTIVATING THE GREEK IDEAL OF PHYSICAL AND MENTAL PERFECTION.		

possessing this all-round knowledge of the science and practice of educational hygiene are actually *now available* and can be procured for state, city, and rural district school systems as Supervisors of Hygiene at salaries ranging from about \$2,000 up to and beyond \$4,000. They are comparatively few in number and somewhat expensive, and yet, as I have attempted to show in other places, they will not necessitate much addition to current school expenditures in a locality where school health provisions have already been established. The new, reorganized system need cost little more than the old, unsupervised, uncorrelated and wasteful system. Such a physician-physical-educator can, for example, frequently do the work of two to four or five part-time medical inspectors and of one or two elementary teachers, or supervisors, of physical training. He can direct athletics and summer playground work, evening recreation centers, and public school athletic leagues. He can direct the nurses in such a way as to make it possible in many places to eliminate attendance, or truant, officers, as is now being done in several places, most school non-attendance being caused by ill-health. He can make the work of the whole health and development corps more efficient, eliminating waste, testing results, cutting down exclusions and illness, absence, and consequent retardation, non-promotion and elimination. He can be the health leader of the schools and frequently of the community, and can quite largely be held responsible for the health of the pupils and teachers of the public schools.

There is a good deal of complaint to-day that physicians are paid too little for their customarily part-time services in the schools, but when we investigate and learn how many days of the week they go to the schools, how many hours or minutes a day, how much time is spent in traveling from school to school and in making out reports, how many days they are absent altogether, how often they are punctual, how well they get the coöperation of teachers, pupils, and nurses, and how many of the weeks of the school year they actually are "on the job," we shall probably decide that, in general, such organization is bad, and that many such salaries are entirely too high and a source of wasted expenditure. Lack of careful administration and supervision, lack of definite standards, and lack of scientific absorption in the solution of the school health problem is quite largely defeating the movement which potentially should have so much to do with improving school and national health.

What we need is *full-time workers*, special qualifications, broad and scientific supervision, health leadership and experimentation, and, finally, a complete reorganization and integration of all the heterogenous features and phases of educational hygiene. Needless to say here, this work should be in the hands of boards of education and *not* of boards

of health. The work is very much broader than the controlling of infection and curative medicine. It is educational and sociological, and organically united with all school health agencies.

2. OFFICERS OF EDUCATIONAL HYGIENE

In every state there are many cities, villages, and rural districts that are desiring skilled help in promoting health ends. It has been a matter of constant surprise to note the almost painful anxiety of many nurses, school officials, and medical supervisors, in the places I have visited, to learn the best methods that have been worked out by other localities and what can be done to put into operation or to make more efficient their school health provisions. With adequate leadership in each state it would not be long until most progressive communities had arisen to the modern hygienic standards and the backward ones had been powerfully stimulated to move in the inevitable direction. The schools and the states want health leadership. This important service can be performed by no less a person than a *State Supervisor of Educational Hygiene*, in the *State Department of Education*. His function will be to visit, study, plan, inspire, re-vitalize, and co-ordinate all school health agencies in the state, and his department may well be divided into the five divisions above mentioned. Present school officers do not have the special medical and hygienic knowledge, the interest, nor the time skillfully to manage this great many-sided developing instrument for making healthy, vigorous, and happy the lives of our developing citizens. This is the work of the Supervisors of Hygiene.

We have already mentioned the need of the local supervisor of hygiene for a city, a group of small cities, or for a rural region, say a township or county. A city as small as ten thousand population can easily afford such health leadership. As cities increase in size the need for such leadership becomes greater and greater. Of course we do not expect an immediate or complete realization of such health administration. General hygiene supervisors are now being provided by states and by the larger cities. The present movement for the improvement of rural life and rural education will also undoubtedly ultimately bring about such school health organization as is here set up as a tentative working standard.

3. ORGANIZATION OF EDUCATIONAL HYGIENE

The Supervisor of Hygiene is paid, let us say, \$2,500 for his services for the beginning year or years. For two hours or more each day he may medically examine the school children. With two hours a day he can in the school year examine a maximum of about 3,000 pupils and

make such inspections (anything less than the annual routine physical examination once a year of each pupil) as prove necessary, apart from the examinations. Some cities now have two or three part-time physicians for this number of pupils. For each other group of 3,000 pupils the Supervisor will, at first, need a part-time physician. The latter should be paid from \$40 to \$60 a month of forty hours, on the average, for two hours' daily service in examining pupils and making a few necessary inspections of urgent cases referred to him by the nurse or teachers. He should make examinations in but *one school a day*, perhaps five different ones a week or ten in two weeks, depending upon the number of schools necessary to furnish the required number of pupils, thus eliminating the great losses of time due to traveling about from school to school each day on tours of *inspection*, work legitimately belonging to the nurse. The physician is a medical *examiner* principally, not an inspector. He has as his assistant a school nurse who helps at examinations, refers to him difficult cases, makes most of the inspections, and does part of the follow-up work. The number of assistant physicians, or medical examiners, can roughly be determined by subtracting from the number of pupils, elementary and high, 3,000 for the Supervisor and dividing the remaining number by 3,000.

During the remainder of his day the Supervisor of Hygiene can devote himself to the supervision of the work of the nurses, the assistant physicians, the hygienic aspects of new and old buildings, the school clinic or clinics, if any, play and playgrounds, athletics, and the other work of physical education. Here, as suggested, may be another large saving towards his salary, for in many places the present poorly trained elementary physical training teachers, with salaries ranging from \$500 upward, may be entirely eliminated. We have now in their place one who knows not only the field of hygiene and physical education, but vastly more in the field of preventive and curative medicine. A number of other such savings toward his salary will be apparent to many superintendents when the idea is applied to their own school systems. Where, of course, cities or other localities have done little or nothing toward meeting the health situation—have few or no teachers of physical education, have no nurses, no physicians, no clinics, little or no expenditures for the improvement of the health and energy of their charges—who look upon children in a partial, psychological manner (as disembodied mentalities) instead of wholly and entirely; then to make modern hygienic knowledge general school and community practice will mean *money*, from two to three or five per cent of current school expenditures. But even here a three per cent increase, say, will not mean permanently increased outlays for the simple reason that bad health conditions unremedied and unprevented have already been a large and insidious

means of waste. Health is the greatest economy a school can purchase; and preventive education goes hand in hand with preventive medicine.

At the beginning there should be at least one nurse to each physician including the supervisor. In most localities, however, there will probably soon be provided one nurse for, at most, each 2,000 pupils enrolled—better, for each 1,500 pupils enrolled. A system with 6,000 enrolled elementary and high school pupils would thus have a hygiene supervisor, two assistant physicians two hours a day, and three nurses. The latter would be on full time, five and a half days, about forty hours a week, thus giving four times the number of hours to the service as the assistant physician. Whether there need be any elementary teachers of physical training, or more nurses or physicians, or any other changes, can be determined through intelligent investigation by the supervisor and superintendent after the system is started.

The present directors of physical education in the high schools, with their gymnasiums and regular physical education work, will perhaps be kept, a man and a woman for each large high school or group of high schools. Such persons, however, should have medical training in order that they may, to a large extent, carry on the work of medical inspection for the high schools and do the best work as physical educators. Not having such equipment for their work, they should be given necessary medical instruction and training by the supervisor; and they should also attend summer colleges for that purpose. Each pupil in the high schools should be *examined* once a year by the physicians, male and female, preferably the supervisor and a woman physician, if possible, while the *inspections* can be carried on by the teachers, nurses, and physical training teachers. Since the latter see all the pupils each week, they should probably bear most of this responsibility. When trained, they may, with the help of the supervisor, be able, perhaps, to make unnecessary any visits to the high schools by nurses and assistant physicians.

Both the supervisor and at least part of the nurses should work eleven months in the year, the latter in relays to bridge over the summer months, some in July and some in August, in order to carry on the much needed inspection of children in summer schools and playgrounds, the home visits necessary for new cases and for obtaining cures for old cases left over uncured from the school year, the instruction of mothers in the prevention of infant mortality and the home care of the children, soon, if they live, to become members of the schools.

The salary of the nurse should not be less than \$75 a month for eleven months, but paid twelve times a year the same as other school officials—\$825 in all. Inexperienced nurses may be started at a lower salary, say, \$650, and a higher maximum should be established, while

all should be on a definite salary schedule, the same as teachers. Oakland, Cal., has an admirable system under a supervisor at \$3,600 and a corps of nurses at \$1,200 each with \$25 extra for carfare each.

ELIMINATION OF PART-TIME SERVICES BY PHYSICIANS

It is possible that all part-time work for the assistant physicians may, as at Oakland and Albany, be eliminated in many places. It is a problem yet to be worked out. Part-time services are undoubtedly only a temporary makeshift. The argument that such work keeps the physician in touch with his profession, and that it prevents his "going to seed" in routine seem to be of very little force. The right kind of a supervisor will win the respect and coöperation of the medical fraternity of the community and will keep his assistants in touch with the developing science of their profession and general medical sociology; while physicians who would "go to seed" in the manifold phases and developing opportunities of this new work in the field of state control of the health of the young are such as would "go to seed" in any system and any kind of work, and should be eliminated as soon as possible. No school official of the right type can to-day get very much out of touch with actual life and scientific and social progress.

The assistant physicians may give three hours each morning to the work, but it is doubtful whether it would be wise to require them to do the work the two or three hours of the afternoon also. They might be employed to teach hygiene in the high schools, to help supervise the physical training, school sanitation, etc., as in England, but they would require a salary two or three times that of nurses, and it is doubtful whether it would not be better to eliminate the physicians and employ only specially trained nurses and continue their training in service. Diminishing returns with the increase of salary of physicians speedily bring in the school nurse, often more efficient generally than are physicians. Perhaps the solution of part-time will be made in this direction, as it is in many cities at present. The weak link is the need for a large amount of medical education for the nurses before and while in service. This, too, furnishes a very definite problem which is being attacked with vigor in at least four cities. Her chief education will be in the actual work under skilled supervision and training.

4. THE METHOD OF MEDICAL INSPECTION

(a) *The Preliminary Standardization Clinic.* The supervisor of hygiene should meet the physicians and nurses at the beginning of the year and with them examine a number of children. Teachers and principals may also be present. The object is the development of com-

mon standards and of good team work. Teachers should be instructed as to their large and important part of the work in referring children for inspection and in seeing that cures and preventive measures are obtained; and symptom charts and medical inspection handbooks such as Hoag's "Health Index of Children" (Whitaker and Ray-Wiggin Co.), or Cornell's "Health and Medical Inspection of School Children" (F. A. Davis Co.) should be furnished them thru the school libraries. Dresslar's new book on "School Hygiene" (Macmillans) is valuable for most phases of school hygiene. Ditman's "Home Hygiene and Prevention of Disease" (Duffield), Lippert and Holmes' "When to Send for the Doctor, and What to Do Before the Doctor Comes" (Lippincotts), and Hutchinson's "Handbook of Health" (Houghton, Mifflin Co.) are three new very simple and very practical books for teachers, nurses and parents. Burks' new volume on "Health and the School" (Appletons) is helpful. Holt's "Diseases of Childhood and Infancy" (Appletons) is authoritative, encyclopedic, and technical, but exceedingly interesting to those devoted to the whole child, and very enlightening as a general reference.*

The present lack of agreement in the kind of work done by physicians and nurses in the way of exclusions, degrees of defects to be referred for treatment, coöperation with teachers, methods of recording and reporting, etc., can be largely done away with by such preliminary and other meetings.

(b) *The September Routine Room Inspection of All Pupils.* The nurse and physician working as a team, the latter inspecting and the former helping and recording, can medically inspect an ordinary room full of pupils in a half hour. At the beginning of each year they should make a rapid room inspection of their 3,000 pupils in the first two weeks of the term. Only the most serious and the parasitic and infectious ailments should be referred for treatment, since all pupils will be given a careful examination in turn before the end of the year anyway, and the object here is to get the children in good shape for their year's work and to prevent any possibilities of epidemics. Detailed directions for all this work I have given in the volumes mentioned at the beginning of the paper. Briefly, the pupils file past the physician as he stands with his back to a good light at the side of the room while the nurse records ailments, by the use of the code numbers of a weekly report form, on each pupil's cumulative health record card, a sample of which

*Other new and helpful books are: Chisholm's "The Medical Inspection of High School Girls," Terman's "The Hygiene of the School Child" (Houghton, Mifflin Co.), Newmeyer's "Medical and Sanitary Inspection of Schools" (Lea & Febiger), Cruickshank's "School Clinics" (The Survey, N. Y.), and Terman and Hoag's "Health Work in the Schools" (Houghton, Mifflin Co.).

is here presented, or the pupils are called one by one into the hall for private inspection.

(c) *Occasional Room Inspections.* Special, or occasional, room inspections will be made by the nurses thruout the year as they find it necessary. In case of an impending epidemic both doctors and nurses may make a room inspection of several or all schools to eliminate carriers and other infected children.

(d) *Individual Inspections.* Individual inspections will be made by the nurses of pupils entering any school for the first time after the September room inspections, of pupils absent for more than three days, of pupils referred by teachers each day, etc. The physician will inspect such children, especially urgent cases referred to him by the nurse or teachers, in the single school he visits each day. Work that the nurse can do as well should be left to her as much as possible. If possible, the assistant nurse should be at the school before the physicians' arrival each day to eliminate all but the most technical inspection of cases puzzling to her. The extra nurse, on the 2,000 pupils basis, can daily visit and inspect each school not visited by the nurse and physician who work as a team, and can help with the home visiting.

(e) *Examinations.* Complete routine physical examinations of all pupils in the school system should probably be made each year. They will begin immediately after the September room inspections and last thruout the school year, each physician having sufficient children to keep him busy all year. The doctor and assistant nurse will work together in the medical inspection room and begin with the children of the lowest grades. The nurse will make the examinations for sight and hearing, make records, fill out notices, and calm the children and get them ready for the more strictly medical examination by the physician. Ten or more children can thus be examined in an hour, twenty in the physician's two-hour day, or a hundred as a minimum a week. The number will vary with the amount of consultation over puzzling cases, the age of the children, and the character of the neighborhood. No routine height, weight, chest expansion or other anthropological measurements need be made. They are little used when made and are of little practical value. They take up much time and most supervisors will find that they can be eliminated without loss. All health records will be placed on the individual health record card, and most or all other records and reports will be made out by the nurse, thus eliminating the great loss of time thru having physicians, at greater expense to the system, doing such work. Most individual record cards and most reporting systems are, at present, seriously defective. I have tried to

devise a system which will eliminate many of the weaknesses. The report is made for each day and sent in *weekly on Saturday afternoons* when all the home visiting has been done. The extra nurse who does not work directly with a physician will make a report of her own inspections and home visiting or give her report to the physician's assistant nurse to incorporate in the single, district report.

We greatly need a tentative standard classification and terminology for all the ailments of children of school age. One worked out by the writer, by which to systematize and compare the ailments found in the twenty-five cities especially studied, is here offered, along with an estimate derived by much study of the probable number of children among each thousand pupils of all grades who will be found to be rather *seriously* affected during a school year. They are only rough and average figures, without deviations, and based upon poor records. The actual sum of ailments for the twenty-five cities showed that pediculosis (lice) was most frequent while defective teeth took second place. Really, however, defective teeth are far more common.

This classification should probably be studied, modified and made a working standard by a representative committee of the National Education Association or National School Hygiene Association, in order to promote efficiency and inter-city comparison of results. At present we are practically without standards in this whole field.

EXHIBIT A

Tentative Standard Classification and Terminology of School Ailments for School Records and Reports. With the probable number of referable ailments to be found in any school year among 1,000 elementary school children of all grades.

		Number of Serious Ailments among 1,000 Elementary Pupils
I. <i>Non-communicable Ailments.</i>		
A. Physical Defects.		
1.	Adenoids, nasal obstruction, etc.....	50
2.	Anaemia.....	10
3.	Deafness, defective hearing.....	5
4.	Dental, teeth.....	660
5.	Enlarged tonsils.....	60
6.	Eyesight, vision.....	70
7.	Eyes crossed, strabismus, squint.....	7
8.	Glands enlarged, adenitis.....	10
9.	Heart defects.....	9
10.	Lungs very weak, not tuberculosis.....	5
11.	Malnutrition, debility, indigestion, general condition.....	20
12.	Mentality defective.....	10
13.	Nervousness, chorea, habit spasm, nervous exhaustion.....	2
14.	Palate defects.....	7

		Number of Serious Ailments among 1,000 Elementary Pupils
I. <i>Non-communicable Ailments.</i>		
A. Physical Defects.		
15.	Skeleton, orthopedic defects (flat-foot, club-foot, etc.).....	2
16.	Spine: curvature, posture, round shoulders, etc.....	8
17.	Speech: stuttering, stammering, lisping, etc.....	9
B. Common Ailments.		
18.	Abscess, boils, etc.....	5
19.	Acute sore throat, cough, etc.....	2
20.	Bronchitis.....	1
21.	Cleanliness needed.....	20
22.	Catarrh, rhinitis.....	10
23.	Colds, bad, coryza.....	30
24.	Ear discharge, otitis media.....	15
25.	Ears: ear wax (impacted cerumen), foreign, bodies, etc., minor.....	5
26.	Eczema.....	7
27.	Eyes: "sore," blepharitis, styas, iritis, etc., minor.....	20
28.	Headache (a symptom), migraine, neuralgia.....	15
29.	Laryngitis.....	5
30.	Nose-bleed, epistaxis.....	2
31.	Pharyngitis, chronic sore throat.....	3
32.	Rheumatism.....	1
33.	Sex ailments and habits.....	10
34.	Skin ailments, minor: herpes, seborrhea, acne (black-heads) etc.....	15
35.	Stomatitis, mouth ulcers, "canker sores".....	1
36.	Wounds, sores, sprains, poison-ivy, chilblains, "first-aid," etc.....	150
37.	Urinary ailments, incontinence of urine, enuresis.....	2
II. <i>Communicable Ailments.</i>		
A. Parasitic and Minor Infectious Ailments.		
38.	Conjunctivitis, "pink eye," etc.....	30
39.	Favus, yellow scalp sores.....	1
40.	Impetigo "contagioso," infectious sores.....	20
41.	Influenza, grippe, infectious colds of a serious character.....	1
42.	Pediculosis, head lice and vermin.....	50
43.	Ringworm, body and scalp.....	4
44.	Scabies, itch.....	5
45.	Tonsilitis, quinsy.....	10
B. Infectious Diseases.		
46.	Chicken pox.....	6
47.	Diphtheria.....	2
48.	Measles.....	4
49.	Mumps.....	4
50.	Scarlet fever.....	4
51.	Trachoma, "granulated eye-lids".....	1
52.	Tuberculosis of the lungs, "consumption".....	1
53.	Tuberculosis, bones, etc.....	1
54.	Whooping cough.....	4

I have estimated that in a school year about one-third of our elementary school population will be found *free* from ailments, one third with *teeth defects only*, and one-third with *teeth defects and other ailments*.

III. CONCLUSION

Our time limit forbids further description of this plan of reorganization of school health provisions. The whole plan should probably be subjected to criticism and recommendations by a representative committee of one or more national organizations. The essential element of the system is to get the right man as supervisor or educational hygiene. Then details and the various elements necessary to scientific management and real medical sociology can be administered by one capable and in touch with the local situation. The present systems of medical inspection with their poor, expensive, and wasteful methods, and with recording and reporting systems largely copied from a few primitive models of little value, are but the first feeble steps toward real school hygiene. *The danger is that these first feeble efforts will be taken as standards for future performance*, and that the heterogenous uncorrelated phases of the whole movement may be left at a low stage of evolution.

This country is far behind several European countries in the provisions for school and national hygiene. Our death rate is too high, our morbidity is too widespread and common, many parasitic and infectious diseases stalk abroad over the land, and the hygienic knowledge of our teachers, and consequently of our children and citizens, is very meager and entirely inadequate. The vast field of medical research has brought to the schools a wealth of health knowledge and many new agencies and instruments for governmental and community control over the health destinies of our people. Along with the problem of adequate vocational education and guidance for our "nation of sixth graders," the health problem stands out as one of the great and pressing problems of life and the public schools.

The fundamental method of adjusting the schools to the situation is, *first*, to get specialized intelligence at work on the problem, *second*, to study and investigate health needs of pupils and community (deaths, diseases, defects, etc.), *third*, to study the relation of the school to other health agencies in order to determine its supplemental function, and *fourth*, actively and energetically, with state aid and community co-operation, to go forward and make the health knowledge now possessed by the few the actual health practice and lives of the many. Preventive medicine and preventive education must go hand in hand. The goal is economy, efficiency, national vitality, and national happiness.

DE

"New" = first found in school

Number of Ailments met during the week by Doctor & Nurse

COMMUNICABLE AILMENTS	Physical Defects	Ailments
	1	Adenoids, Nasal Obst.
	2	Anemia
	3	Deafness, Hearing
	4	Dental, Teeth
	5	Enlarged Tonsils
	6	Eyesight, Vision
	7	Eyes Crossed, Strabismus
	8	Glands Enlarged, Aden.
	9	Heart Defects
	10	Lungs Weak, not Tub.
	11	Malnutrition, Debility
	12	Mentality Def.
	13	Nervousness, Chorea
	14	Palate Defects
	15	Skeleton, Orthoped.
	16	Spine, Curvature, etc.
	17	Speech Defects
	A	
	B	
	C	
	18	Abscess, boils, etc.
	19	Acute Sore Throat, etc.
	20	Bronchitis
	21	Cleanliness needed
	22	Catarrh, rhinitis
	23	Colds, bad, Coryza
	24	Ear Discharge, Otitis
	25	Ears: minor
	26	Eczema
	27	Eyes: minor
	28	Headache, a symptom
	29	Laryngitis
	30	Nose bleed, Epistaxis

COMMUNICABLE AILMENTS	Infectious Diseases	Minor & Parasitic	Non-Communicable
	31	Pharyngitis	
	32	Rheumatism	
	33	Sex Ailments	
	34	Skin: minor	
	35	Stomatitis	
	36	Wounds, Sores, etc.	
	37	Urinary, Encuresis	
	D		
	E		
	F		
	38	Conjunctivitis, pink E.	
	39	Favus	
	40	Impetigo	
	41	Influenza	
	42	Pediculosis, lice	
	43	Ring worm	
	44	Scabies	
	45	Tonsillitis	
	G		
	H		
	I		
	46	Chicken Pox	
	47	Diphtheria	
	48	Measles	
	49	Mumps	
	50	Scarlet Fever	
	51	Trachoma	
	52	Tuberculosis: lungs	
	53	Tuber. Other parts	
	54	Whooping Cough	
	J		
	K		
	L		
	M		
			Sum Totals

INDIVIDUAL HEALTH RECORD CARD, NUMBER ONE

HEALTH RECORD

Date of Birth

19

Name SURNAME

Address

Phone

X=Needs treatment, referred. ⊗=Cured. O=Improved, not cured. V=Minor, not Ref. E=Excluded. R=Readmitted. Nurse, red in K.

Date of Examination

Always bring this card to the Examination or Inspection		Date of Examination		Date of Birth	
1	Adenoids or T.O.				
2	Pinnae or Malnutrition				
3	Deafness, Def. Hear.				
4	Dental D, Teeth				
5	Enlarged Tonsils				
6	Eyesight, D, Vision				
7	Glands, enlarged				
8	Heart or Lungs				
9	Nervous, Chorea				
10	Skeleton, Curvature				
11	Other Phys. Defects				
12	Digestive System				
13	Ear Rilements				
14	Eye Rilements				
15	Respiratory Tract				
16	Skin Rilements				
17	Skin Rilements				
18	Wounds, Sores, etc.				
19	Other Common Rile				
20	Other Common Rile				
21	Communicable Rile				
22	Communicable Rile				
23	Communicable Rile				
24	Communicable Rile				
Days lost thru Illness:					
Remarks:					
Remarks:					
Remarks:					
Remarks:					
Remarks:					
Remarks:					

1

2

3

4

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EXHIBIT C

Proposed reorganization of Educational Hygiene for a typical American city with 9,000 pupils and no free dental or medical treatment for school children:

PRESENT INEFFICIENT SYSTEM		PROPOSED REORGANIZATION	
12 part time (very little) at \$500..	\$6,000	1 supervisor of hygiene.....	\$2,500
2 truant officers.....	2,500	6 nurses, 4 at \$700, 2 at \$770	4,440
1 elementary physical training teacher	1,000	2 physicians (2 hours daily)	1,000
0 nurses.....	000	1 school dentist (2 hours daily)....	500
		1 school clinic and equipment.....	1,000
		new blank forms for records and reports	210
	<hr/> \$9,650		<hr/> \$9,650

Here we have the new and vastly more efficient system at the same expense. The \$1,000 for the school clinic equipment is an expenditure for one year only; this amount can be used in succeeding years for other purposes.

DISCUSSION OF

LOUIS W. RAPEER'S PAPER

BY

ROY K. FLANNAGAN

In defense of Dr. Rapeer's plan for visiting school nurses in the absence of medical inspection. The criticism being that a nurse should not be expected to diagnose disease since many obscure eye troubles would be impossible of diagnosis by her.

It is idle to talk about medical inspectors for the vast bulk of the people in country districts who need the service as much if not more than city people, the cost of medical men being prohibitive, and the follow-up work in the home being impossible to them. We must do what we can. The nurse is a possibility at a cost which may be afforded. She may not be able to discover obscure eye defects, but she can tell when there are large glands in the neck and any fool can tell anemia, pediculosis, and deafness. Finding, then, that rural sections may not have expert medical attention in the schools, let us not put obstructions in the way of such splendid aid as the nurse may give. Let us put our feet at least on the lower rungs of the ladder lest we never reach the top.

EXAMINATION OF SCHOOL CHILDREN FOR LABOR CERTIFICATES

BY

DANIEL V. McCLURE

There is at the present time among all civilized nations throughout the world, a wide-spread movement for the betterment of conditions, which are now well recognized as of vital importance to the health and physical welfare of school children and child-workers. In our country, this movement has been steadily gaining in force and strength and pushing its way ahead, until it has finally taken a place in the forefront of national thought and discussion. Progressive and intelligent people, everywhere, are giving this subject much serious reflection. The public, generally, through many active agencies and well-informed sources, is fast being educated and enlightened to the vast importance of this work. Indeed, one wonders, now that we are in the midst of so rapid a development of this great educational movement, that it has so long remained seemingly neglected.

Our national health is physically our greatest asset. As the foundations of our national health are laid during the school years, and the conservation of men and women must begin with the conservation of the child, it is evident that what we would have appear in the life of our people, we must put into the schools.

Eugenists say that every child has the inalienable right to be well born. It is undeniable that every child has at least the right to full opportunity for its mental and physical development. The science of eugenics, if it may properly be called a science, has been defined as the study of agencies under social control that may improve or impair the racial qualities of future generations, either mentally or physically.

Where, we may ask, can be found a greater field of opportunity for the improvement of future generations, than among the school children and child-workers of the present generation? The United States Commissioner of Education in a bulletin recently issued, relating to the Medical Inspection of Children in Schools says: "No educational movement, in modern times has had more vital relations to the children; to the homes they represent; and to the nation, than medical supervision of school children, and the general hygienic movement it typifies."

Within recent years, many of our States have enacted laws for the protection and regulation of child labor. Two years ago a commission was appointed by the legislature of our State for the purpose of investi-

gating the physical and hygienic conditions affecting industrial workers, especially those relating to child labor. This commission after a most thorough and painstaking investigation presented an exhaustive report which showed that deplorable conditions existed in many of our industries in which children are employed—conditions which called for prompt and efficient correction. As a result of the recommendations of this commission many important enactments for the greater protection of child-workers were added to our laws, and it may be said that no more beneficent legislation has ever been given to the people of our State than that designed to protect the lives and health of those employed in our various industries.

Among the many wise enactments now under regular and systematic enforcement may be mentioned:

A minimum age limit for working children, which is now placed at fourteen years.

Limitation of the hours of labor for children and minors.

Prohibition of night work for children under sixteen years.

The exclusion of children from dangerous and prohibited employments.

The inspection of the sanitary, ventilating and lighting arrangements in factories and mercantile establishments.

The raising of compulsory school attendance to fourteen years, beginning at the age of seven years.

The prohibition of child labor in mines and quarries.

The establishment of an eight-hour day for children employed in factories, and a nine-hour day for those in mercantile establishments.

The limitation of hours of work in factories for girls over sixteen and boys sixteen to eighteen, to nine hours daily—fifty-four hours weekly.

Proper and adequate protection against dangers from fire.

One day of rest in seven, provided for children employed in mercantile establishments.

And last, though by no means least, the compulsory physical examination of every child applicant for a labor certificate.

The urgent necessity for this last most important enactment was made apparent by the report of the State Investigating Commission, and to-day throughout this State, a physical examination of every child is required before an employment certificate can be issued. A permanent record of each physical examination made is kept by the local Department of Health, a duplicate of which must be sent to the State Labor Commissioner.

The following is the manner in which an employment certificate is issued: The child, its parent, guardian or custodian must first present

proofs of birth and education as required by law. Proofs of birth are accepted in the following order:

First: A transcript of a birth certificate, filed according to law.

Second: A certificate of graduation, showing that the child is a graduate of a public school, or other school of the State of New York, or elsewhere, having a course of study of not less than eight years.

Third: A passport or duly attested transcript of a certificate of baptism, showing the date of birth and place of baptism of such child.

Fourth: When the above proofs are not obtainable, then other documentary evidence together with an affidavit of the parent, guardian or custodian may be presented, which evidence shall be submitted at a regular meeting of the Board of Health, and the board by resolution may provide that such evidence of age shall be fully entered upon its minutes and shall be received as sufficient evidence of the age of the child.

Fifth: In case of inability on the part of the parent, guardian or custodian to produce any evidence of age previously specified, an application containing the alleged age, place and date of birth of such child, together with such further facts as may be of assistance in determining the age may be made, which application shall be filed for not less than ninety days so that examination may be made of the statements contained therein, and in case no facts appear within such period tending to discredit or contradict any material statement of such application, then the child may be directed to appear before two physicians officially designated by the Board of Health, who shall certify, in writing, their opinion as to the age of the child, and whose certificate shall be accepted as sufficient proof.

In all cases, the evidence of age first specified; namely, a transcript of the birth certificate, shall be required in preference to any other evidence, and the parent, guardian or custodian must show that an effort has been made to obtain a copy of such birth record. In cases of foreign birth,—and in Buffalo we have many of these,—full printed directions for obtaining such birth records are given.

The applicant must also present a school record properly filled and signed by the principal or other executive of the school showing that he has had the required school attendance, and has received the necessary instruction which the law requires and is reasonably proficient therein.

The law requiring the physical examination of applicants for labor certificates in this State became effective last October, and proper facilities for the performance of this work were at once provided by the Department of Health.

From October 1st of last year to August 1st of this year, four thousand thirty-two (4,032) physical examinations have been made in Buffalo and three thousand six hundred twenty-two (3,622) certificates have been issued. Of the total number of applicants receiving certificates two thousand two hundred seventy-two (2,272) were boys, one thousand three hundred fifty (1,350) were girls. Of the number of boys one thousand five hundred seventy (1,570) gave their prospective employment as mercantile and seven hundred two (702) as factory. Of the girls eight hundred four (804) were for mercantile and five hundred forty-six (546) for factory employment. Three thousand eighty (3,080) of these children were born in Buffalo, three hundred eleven (311) were born in other parts of the United States and two hundred thirty-one (231) were of foreign birth.

Four hundred ninety-five (495) certificates were refused for the following reasons:

- Insufficient education.
- Insufficient school attendance.
- Under age.
- Marked defective vision (uncorrected).
- Contagious skin diseases.
- Pronounced anaemia.
- Mentally defective.
- Malnutrition and underweight.
- Marked nasal obstruction, due to adenoids, nasal polypi, etc.
- Correctible orthopedic defects (uncorrected).
- Discharging ears.
- Acute eye disease.
- Miscellaneous, including uncleanliness, pediculosis, etc.

Ninety-one (91) per cent. of those refused for physical defects had those defects corrected and were granted certificates; the remainder are under treatment.

In providing for the prompt correction of these physical defects for which certificates are refused, free use is made of our excellent dispensary facilities in all cases which might impose financial hardship on those having the care of the child.

These refusals by no means represent the total number of defects found, as a great many defects not considered sufficient reason for refusal were brought to the notice of parents and guardians, and treatment recommended therefor.

All applicants whose physical condition falls considerably below normal standards, are granted limited certificates which are not accepted for factory employment.

Forty-three (43) per cent. of applicants were found to have decayed teeth.

Realizing the importance of properly carrying out the work of dental hygiene in the schools, Health Commissioner Fronczak is perfecting plans for the establishment of suitable clinical facilities to meet this urgent necessity.

The work of this division had not long been in operation when it became apparent that it might be of valuable aid to children seeking employment, and to this end employers were encouraged to enlist its services.

Our efforts in this direction have received the cordial support and endorsement of our Health Commissioner, and it is gratifying to note that through the medium of this branch of the Department of Health, scores of children have received valuable assistance in securing proper and profitable employment.

In conclusion I may add that if we are to preserve and maintain our boasted standards of American manhood and womanhood, we must leave nothing undone that will promote the mental and physical welfare of our school children and child-workers.

THE RELATION OF MEDICAL INSPECTION OF SCHOOL CHILDREN TO THEIR EDUCATION

BY

ELEANOR H. JOHNSON

To begin with a definition of terms, medical inspection of school children, as it will be discussed in this paper, means the effort to ascertain and bring about a cure for all their remediable physical defects and illnesses. That such inspection is both justifiable and necessary no longer needs to be proved. That it should be inseparably connected with a child's mental training has been so fully and ably discussed in the Russell Sage Foundation publication entitled "Medical Inspection of School Children," by Dr. Gulick and Dr. Ayres, that it needs no further argument here. The question now is primarily one of connection and co-ordination. How may this necessary task be accomplished in the most efficient way, obtaining the maximum result with the minimum expenditure of time and money? How may the facts concerning the children examined by doctor and nurse be of most use to them as school children? A knowledge of the child's defects might be of interest to the school authorities and to physicians but without the necessary follow-up and clinical work it means little enough to the child and to the community. A knowledge of the defects and the effort to remedy them would be and is of little advantage to the school if at the same time an effort is not made in class to adjust the teaching to the child's individual difficulties.

Medical inspection has, then, four factors, all equally important:

I. *Doctor.* Through the school *doctor* the physical condition of each pupil must be learned and a record kept of his defects, whether remediable or not.

II. *Nurse.* Through the school *nurse* the parents must be instructed just what should be done to remedy curable defects, information must be given them about incurable defects, and any connection needed between the child and the proper clinic must be made.

III. *Teacher.* Through either doctor or nurse the *teacher* must be informed concerning the condition of each child in her class that she may make allowance for physical handicaps and help in their cure and, where possible and desirable, adjust the classroom routine to the child's peculiar needs.

IV. *Clinic.* From the knowledge acquired by the doctor and nurse as to prevailing physical defects and their best treatment the establishment of the needed *clinics* must be urged, the standard of clinical treatment of all children be constantly raised, and the connection of clinic and school in some way made closer.

Statistics have been gathered, many of which have been published by the Russell Sage Foundation through its Department of Education, which prove that retarded children have a larger proportion of physical defects than children in normal grades. So far as I know no large body of statistics has been published which proves more than that, but surely that is enough to give food for thought. During the last winter, in New York City, several studies have been made of the evident improvement in school work and conduct resulting from actual treatment of all physical defects in a given group of children, and another year must show much additional proof of that result. Quite apart from statistics however, it is apparent to anyone who visits the public schools constantly and observes closely that physical condition and irregular attendance are two great factors making for retardation, and that very often irregular attendance spells physical handicap. The cases of two boys in different schools immediately come to mind as illustrations of this point and also of the first two divisions of our subject.

I. *Work of Doctor.* The first boy sat restlessly in the class for foreign children. He was American born of American parents, I was told, but a bad truant and, therefore, very backward. He had been put in that class that the unusually bright teacher might give him the special attention which is only possible in a small class. I questioned the strained look in his face, and was told that it was the expression often found in the face of the hopeless truant. When I suggested eyes and spectacles, it was found that although this was the third school to which he had been transferred on account of truancy, his card record for physical examination had no statement as to his eyes. My next visit found him spectacled and industrious and the teacher reported satisfactory attendance. Would you come to school regularly if you could not read without pain?

II. *Work of Nurse.* The other boy is an almost exact repetition of this case—and two years later—the one difference moves the illustration along to the second division of medical inspection—the follow-up work. He was a little Italian boy of nine with a pathetically dull look and a bad record for truancy. The difference lay in the fact that *his* eyes had been examined and the nurse had secured for him a prescription for glasses which his parents refused to have filled. It was too much trouble; Frank would lose the glasses. The nurse was entirely

discouraged with the case and was too busy with the more than 3,000 other children on her list to upset a very necessary routine and visit Frank's home again. Happily there was a neighborhood house nearby and one of the workers promised she would not drop the case until the glasses were secured.

Several weeks later, on visiting the school, a proud boy was summoned to speak to me. Head up and with an alert expression, his teacher declared him changed in every way. Such instances could be multiplied many, many times. Let me ask the student of boy psychology which handicapped child is worthy of more attention from the point of view of future citizenship, the boy who plods along in school getting little benefit because of his physical defects but attending regularly through sheer inertia, or the boy who takes matters into his own hands and stays away if he fails to see or hear distinctly.

III. *Connection Between Doctor and Teacher.* Another case to illustrate division 3, is that of a little girl reported to one of the visiting teachers of the Public Education Association by the principal of the school because of poor scholarship. Her conduct was good; her work was bad. She was present pretty regularly and her retardation could not be set down to that. Her teacher described her as absolutely below standard in every subject. After a ten minutes talk with the child she confided to the visitor that she did not see well. The visitor tested her by holding a newspaper at arm's length. At that short distance she could not read the largest capitals in the heading of the paper. She said that she had never told any of her teachers. She had been twice examined by the regular doctor but the only record on her card was with regard to teeth. She also said that she had been told she ought to get glasses, but had never been told how and there was no money at home to pay for them. The child was sweet-faced, quiet and passive and the mother was eager to have anything done for her physical condition which could be brought about, but was ignorant as well as poor. The visiting teacher took the child to a doctor who found 10% vision in one eye and 7% in the other. She also had two poisoned teeth roots and needed an operation on her nose. The final estimate of the visiting teacher is, "Gross neglect of glaring physical defect on the part of all connected with this child. We may get improvement but nothing can make up for the lost time when this 'stupid' child, practically without sight, has been term after term in the same grade without ever being able to obtain a 'B' mark, even the occasional promotion must have been forced." There has not yet been time to judge of the effect of the ensuing treatment on the little girl's school work, but surely one is justified in a somewhat prophetic view.

All these stories illustrate clearly enough the need which the teacher has for instruction as to the physical condition of any child who is slow or irregular or difficult in the classroom. In some states inspection for defect of vision and hearing are made by the teachers themselves, and this insures their knowledge of the two handicaps which most immediately and obviously affect school work. When the teacher gives the test children can be seated according to their condition in these regards and a proper allowance made. The cases requiring attention can be intelligently reported to the doctor in the order of their apparent importance. When an examination is made by the school physician who is in no other way connected with the school system, the knowledge of the defect reaches the teacher's consciousness in some cases only, and who shall presume to say where the fault lies?

In all these statements and in the histories given no criticism of individual work is ever intended; where mistakes or seeming neglect occur the fault, I am sure, lies in the plan of administration. The doctors must educate the teachers as to the effect of physical condition; the teachers must inform the doctors as to manifestation in school work; the nurse and the teacher must act together if home conditions bearing on the physical condition and school life of the child are to be improved, and neglectful parents dealt with effectively. All this implies a close coöperation which would seem to be possible only where principal-doctor, nurse and teacher are equally important agents of one department.

IV. *Work of Clinic.* The subject of school clinics is now very much before the school world. At present there are in the larger cities a great variety of clinics of varying standards, differing greatly in the time they can give to school children. Sometimes action taken in these clinics is known about by the teachers, sometimes not, but it is safe to say, I think, that almost never is advice sent by the doctor dealing with the case to the teacher who is in charge of the child for the larger part of each day, unless a special visitor is involved.

The good results obtained in the school for the deaf in New York City, and the classes for the blind and for cripples, where physicians interested in the special defect work hand in hand with principal, teacher and supervisor, show how valuable such close coöperation may be. These physicians who have volunteered their service or whose salaries have been paid from private funds, have become important factors in the educational life of the children in whose physical condition they are interested. Classroom work has been modified by their advice, special physical training has been given, and the school work has been greatly strengthened through this coöperation. It is also safe to say,

I think, that the physician's knowledge of the subject has been deepened through his close association with the school life. Should not the benefit of such close coöperation be extended to the children whose physical handicaps are not so evident and so permanent?

Some investigation has been made in New York, within the last few months, of the condition of a group of children whose tonsils and adenoids have been operated upon. The clinical work has been found to be very uneven and definite advice as to improving it is hard to get. Doctors differ as to types of operations and specialists now say that such operations should be advised only by those especially trained to recognize the conditions demanding them. They also say that the operation should almost never be performed without hospital facilities, that children should never be sent directly home after being operated on but should be kept for observation. Several years ago many assertions were made as to the beneficial effect of this class of operations upon troubles of brain as well as of body, and consequently they were advised very generally by those examining school children. The result seems to be that such operations are now performed on large numbers of children not always under proper conditions, and not always with careful enough discrimination.

Where can we turn for knowledge on this subject if not to a department for medical inspection, and should not the children be safe-guarded in every way from operations carelessly performed, though their school improvement is given as a reason? The same is true with regard to dental clinics. After the agitation with regard to eyes, then to tonsils and adenoids, now comes the belief that to the diseased condition of the teeth is due many physical troubles which affect the school career. Dental work is difficult to secure for poor children, especially dental work done under the best conditions by able dentists. For those laymen who are interested in the hygiene of school children, and who believe that physical handicaps underlie many of the difficulties in the school with which the teachers are struggling, more information with regard to the best way of advising the parents and the best clinics to which to send the children is needed. Many private physicians give of their time with much generosity, but their treatment must often take place at a great distance from the school and unless special arrangements are made it is given without much knowledge of the child's school history. Experiments in school clinics are now taking place, the results of which are awaited with great interest, but so far no principle has been widely agreed to, no standard insisted upon, no definite connection with the school life has been made a necessary part of this important feature of medical inspection. We are waiting for the subject to be developed, that we may be told what we may best work for. Per-

haps from this Congress may come the special advice which we laymen need.

Other Connections. Other important connections to be made between medical inspection and school life are those dealing with the teaching of hygiene to the school children and with the hygienic properties of school buildings. In most places, there is no connection whatever between these matters and medical inspection.

In a recent plan for teaching hygiene in the City of New York, importance is placed on what is called the routine and the children in different ways are taught to go through with this necessary drill in personal hygiene. A roomful of little girls presenting dramatically the program of rising from their beds, taking deep breaths, brushing the teeth, putting on clean or well-aired clothes and the like is a stimulating sight. But how many mothers have been told that this routine must be carried out? Unless there is follow-up work which could so readily be performed by the nurse in her visits, the effect is very much that of the small boy who was unable to learn to say "I have gone" but always persisted in saying "I have went." The teacher finally in despair kept him after school and told him to write "I have gone" twenty times. When he had finished she was not in the room and so he left the paper on the desk and added, "Teacher, I wrote 'I have gone' 20 times and now I have went home."

A valuable part of this routine is the suggesting of simple and nutritious diet. Nevertheless, in a smaller room, filled with little boys instead of little girls, the question was asked, "How many of you boys had coffee for breakfast?" About three-quarters of the boys raised their hands. Then they were asked how many of their parents allowed them to drink either wine or beer at luncheon or breakfast and fully one-half raised their hands. This of course was in a foreign quarter of the city and the latter condition was largely due to national custom, but the fact remains that wine drinking in Italy for the small boy is rather a different matter from wine drinking on the East Side of New York. The school doctor who deals with anaemia and malnutrition in one part of the school building at stated times and the teacher who deals with proper diets in another part of the building should in some way be connected. The same thought has occurred to some of us with regard to the open air classes. Children who are suffering from malnutrition, anaemia or incipient tuberculosis are taken from the regular school-rooms and entered in open air classrooms. Their gain is immediate and steady, but so far as I know, it has never been learned how many of them sleep in hermetically sealed rooms at home. The hygiene of school buildings follows logically enough. Why waste time treating

a little girl for anaemia when through her school life she is constantly losing strength and vigor.

Relation to School Instruction. At last, then, I come to the subject of this paper, namely, the relation of medical inspection to education. Try as we will, we cannot progress much further than the ideal of the classic writer, "A sound mind in a sound body," and the interdependence of these two divisions of our nature is more and more recognized. Indeed we might include a third and say that as the mind depends upon the body so it is influenced by the spirit and that some day the mental and physical examination in our schools will be connected with an ethical and moral training which is as truly hygienic as either of the others. A child is more than a human being with eyes or teeth or tonsils. In the same analysis he is more than a human being to whom geography and arithmetic may be taught. If his eyes are defective, his arithmetic does him little good. If his teeth are poisoning his body and in that way keeping him from being nourished by his food, he gets little value from the teaching of history. If he is staying out of school because his head aches or because his nervous condition due to physical ailments is not being in any way dealt with, it is not enough to designate him as a truant and transfer him first to a special class and then to a truant school. We have failed to touch the cause in any case and are dealing with very superficial characteristics, just as the patient little girl was kept back term after term, because forsooth, she could not read without pain in her eyes. When we can establish the principle that no child shall be declared dull, retarded, incorrigible or a truant until he is examined thoroughly both for physical and mental condition and his physical defects cured, we shall come nearer to a fair treatment of the children whom we compel to go to school. This work cannot be accomplished by the doctor or the nurse alone any more than it can be accomplished by the teacher alone. The two must work hand in hand with constant comparison of histories, bringing to bear on recalcitrant or neglectful parents all the pressure which the school authority, often the highest they know, can muster.

Where connection of this sort does not exist much valuable work has nevertheless been done, but gaps constantly occur just where the connection is most important and should be closest, first between the doctor and the principal or classroom teacher, second between the school and the home, and third between the child and the clinic.

1. *Gap Between Doctor and Teacher.* Let me close with three histories illustrating these three points. Saidie's parents live in New Jersey but she comes each winter to school in New York, so showing persistence and devotion in her school life, and a steadiness not always

found in children of her race, for she is a little colored girl. Nevertheless she was reported by the principal to a special visitor for her poor work. The teacher characterized her as "lazy and indifferent and below average in work." The more the visitor learned of the child the more at variance this verdict seemed with her general character and history and finally her health record gave the clue. On the card was noted a history of measles, scarlet fever, diphtheria and pertussis, quite enough, one would think to account for unrewarding effort in school. It is impossible to believe that a conference between doctor and teacher with regard to Saidie would not have cleared matters up completely.

2. *Gap Between School and Home or Teacher and Nurse.* Pietro came back to Manhattan from the Parental School for Truants and was put in a special over-age class in his new school. The teacher there believed him quite unfitted for work because of his poor physical condition and reported him for advice to a visiting teacher. She took him to a physician who had volunteered to help and on examination the boy's vision was found to be very defective, several teeth needed extraction, there was nasal obstruction and only 10% hearing in one ear because of perforated eardrum and other ear trouble. Glasses were provided but in spite of repeated efforts the coöperation of the family in regard to treatment for ears and nose could not be secured. The attitude of the parents toward the boy is thus described by the visitor, "Neglectful. Too overburdened with work to give proper attention. Try to coöperate with the school but are very unintelligent." The boy was constantly suspicious and finally the parents refused altogether to take him to the hospital. The family has finally been referred to a relief society and to the S. P. C. C., that the parents' neglect may be more firmly dealt with. Two other boys in the family had been "put away" at different times. It is now much too late to establish that most important connection between the school and the home which in the beginning might easily have solved the difficulties in the path of all three boys.

3. *Lack of Standard in Clinics.* Jennie is a "gentle, shy child," and is greatly handicapped by blindness in one eye. "The parents are willing to do anything for the child's good and stand rather in awe of the school," which augers well for an adjustment of the difficulty. But our fourth factor, the clinic, now comes to the front. The same visiting teacher became interested in this child because her mother came asking for advice as to glasses which the teacher had told Jennie she must have. The mother had already been to one hospital where she was told Jennie could not be fitted. The visitor accordingly went to a nearby dispensary where the eye specialist advised treatment which he said would

be very beneficial. The mother agreed to this but later sent again to the visitor in distress. Jennie had been to the dispensary and had been given electrical treatment by an apparently ignorant attendant. The next day the little girl complained of seeing strange colors and of dizziness and had fallen down stairs. She and her mother were both very much frightened and were glad to go with the visitor to consult a friendly physician who took up the case with enthusiasm. He discovered a slight curvature of the spine and the need of an operation on her nose which might correct the vision. In the meantime he gave her properly fitted glasses. The visitor and the child then went to the hospital which he recommended for the nose operation but were told there, after an examination, that it was not needed. The mother then took Jennie to still another hospital where the operation was again advised and an appointment made. Between the two visits, however, the clinic had been handed over to another physician and through a resulting misunderstanding nothing was accomplished there. Finally another hospital was sought out, but by this time the child was thoroughly nervous and resisted the operation. The doctors then advised preliminary treatment and poor worried little Jennie was given medicine and directions. The one encouraging feature of this rather mixed up piece of work is that the proper glasses have had their result, the child's work has improved and she has been able to progress normally.

Comment on this story seems unnecessary and I am sure no one doubts that closer coöperation and more specific information are greatly needed.

It is not my place to suggest methods of administration whereby the four factors of medical inspection, which I have defined, may be more surely interrelated, the coöperation between them become perfect and these harmful gaps be perfected.

It is difficult not to believe, however, that only where the Chief of the Bureau of Medical Inspection is as important an official within the school system as the chief of any other bureau reporting directly to the head of the system, can proper attention be given to the physical condition of school children and the mental life and general efficiency of our future citizens be improved thereby.

HOW TO GET RESULTS IN THE MEDICAL INSPECTION OF PUBLIC SCHOOLS

BY

N. THOMAS ENNETT

The question of how to get results in the medical inspection of schools is a broad and very pertinent one. We selected it for the subject of our paper not because our system is perfect but because we want to compare notes with you. We want to know your methods that we may improve ours. For the want of time we shall have to confine our remarks to the detection and correction of physical defects in school children.

However, we would like to here emphasize the fact, that medical inspection which does not include careful attention to ventilation, heat, light, cleaning, etc., is a failure.

In other words it is quite as important that the school child have hygienic environment as it is that he have some physical defect corrected.

Any one who has seriously studied the question of "how to get results in medical inspection" must have realized that the literature on the subject, of practical value, is very meagre. While much time has been spent in analyzing the percentages of the various defects found, little or nothing has been written as to how to get these defects corrected.

The success of medical inspection depends upon many things, but mainly upon the energy and ability of the medical inspector, the training and tact of the school nurse, the character of the population, the existence of free dispensaries and the coöperation of the teacher and the family doctor.

What we shall suggest will apply particularly to the average American city, and with minor modifications, to all communities.

In the main, the points we bring out in this paper are the result of our personal experience in carrying on the work of medical inspection in the city of Richmond, Va.

Just at this point we wish to say a word about the organization. The medical inspectors and the school nurses should be under the control of the Board of Education and *not* under the control of the Board of Health. The medical inspection of schools is primarily an educational problem.

The *only* part of medical inspection of schools which should be under the Board of Health is that part related to contagious diseases and vaccination.

There should be a medical director and several medical inspectors,

a supervising nurse and several assistant nurses. The city should be divided into districts, each inspector and nurse being assigned to a certain district or districts. The inspector and nurse must make friends with the principals, teachers and children in their district. This friendly relationship is absolutely essential if the work is to be a success.

The medical director and the chief health officer of the city should have monthly conferences as to the best methods of dealing with certain health problems related to the schools, which problems can be handled, satisfactorily only, by the cordial coöperation of these two officers.

It is also essential that the medical director have monthly conferences with his inspectors. Here each inspector can relate his troubles and, in the exchange of ideas, perhaps find a solution to some of his problems. It is said that in a multitude of counsel there is much wisdom. Another reason for these conferences is, that without them we can not hope for anything like uniformity in the work done. To get the best results the inspectors must not work as individuals but as a unit. Here as in every other organization, it is team work that counts.

The medical director should read papers before the local Medical Society and among other things, state the object of medical inspection of schools and outline the plan for carrying it on.

From time to time reprints should be mailed to every physician in the community; this is particularly necessary for the reason that you probably missed some of the physicians at the Society meetings.

The point of course is: take the family physician into your confidence. Let him see that medical inspection in no way interferes with his relationship to his patients, and not only this, but that it actually increases his practice. Without a very close relationship between the local medical profession and the department of medical inspection, you will be badly handicapped in getting results.

At the beginning of the session, each principal should supply his teachers with permanent physical record cards for all pupils who have not previously been examined. These cards follow the child from grade to grade.

When the medical inspector and the school nurse visit a school for the purpose of making routine physical examinations, instead of sending a note to the teacher requesting her to send down so many children, they should go themselves to the class room, meet the teacher, say a few pleasant words to the children and make friends with both. This little attention will mean much towards getting results. In this work we must never lose sight of the personal touch. As the examinations are completed class by class, the nurse returns the physical record cards to the teacher. It is important too, that she call the teacher's attention to all marked defects, particularly those of vision and hearing, for these

children if not already seated near the front, should be moved there at once.

An important point in regard to the physical record card is that the teacher should be able to interpret it easily. Signs and hieroglyphics have no place on the card unless explained to the teacher. Remember that the card must be intelligible to the teacher and must be in the teacher's room or she will have, naturally, little interest in it.

In many of the cities with which I am familiar the physical record card is kept in the principal's office. The advocates for this plan argue that the cards are easily accessible to the nurse (that she can spend a few minutes in the principal's office looking over the cards and lose little time from outside work), and that the teacher is saved the interruption and disturbance of having the nurse come into the class room. We grant that it is desirable that the nurse save time and that the teacher should not be unnecessarily interrupted. But we feel that if we are to get what we are aiming for—results—the child's physical record card must be in the room with the child and the nurse must come into contact with the teacher and the children—the oftener the better. We should encourage everything that will bring the child, the nurse and the teacher in closer relationship. Whatever time the nurse or the medical inspector may spend in becoming better acquainted with the teachers and children, is time well spent.

After the examinations we send the usual forms to the parents, notifying them of their children's defects. Along with this notice is enclosed a card explaining in simple language, the nature of the defect and the importance of having it corrected promptly. Caution: The medical inspector should be very careful that the defect for which he recommends treatment *actually exists*. A blank card is also enclosed, which card is to be filled out by the child's physician on which he gives his diagnosis and treatment. All we request in regard to treatment is that the doctor underscore the proper word in the following list:

"Medical. Surgical. Glasses. Dental. None."

We have found that many physicians object to giving detailed information as to treatment.

The child returns this card to the teacher and she files it for the nurse who, later, enters the data on the proper physical record card.

I might add that in sending notices out to the parents they should be enclosed in sealed envelopes bearing the official card of the Medical Department of the Board of Education. A plain envelope does not command the respect that the official envelope does. We have tried both. These notices are not mailed to the parents. The nurse turns these notices over to the teacher and requests that she hand them to the children, and also that she urge them to be treated at once or bring

a written reply from the parent within one week. This act at once identifies the teacher not only with the notice, but with the reply as well. This is important, for the teacher can do a great deal towards getting the children to bring in replies. When these replies are in, the nurse can see at once which homes need to be visited. This plan saves the nurse much valuable time, for she makes no unnecessary visits. If the parent pays no attention to the notice or does not promise to have the child treated, the nurse visits the parent at once and tries to overcome the difficulty, whatever it may be.

If it is a case where a visit by the teacher would probably help, the nurse enlists her coöperation. It is very seldom that the combined efforts of these two agencies fail.

In some cities the medical inspector visits the homes. Personally, we have always felt that this was a mistake. In this capacity, that of a social worker, we believe the school nurse can represent the department of medical inspection much more effectually than can the medical inspector. Not only this, but a visit from the school nurse leaves no possible ground for complaint by the family physician.

When you have completed the routine examinations in a school, request the principal to call a special meeting of the Mother's Club, featuring the medical inspector for a talk on medical inspection.

The teacher here, as everywhere else, can be of much service. Her influence with the parents can be the means of a large attendance. At a big meeting of this sort the medical inspector has a golden opportunity, but he should bear in mind that the good resulting from his talk will be in direct proportion to the confidence he is able to inspire in his audience as to his *ability* and his *sincerity*.

After ingratiating himself with his audience, he will proceed to explain the causes, symptoms and proper treatment for the most common defects found in school children. Remember the simpler your language the more valuable your talk. And if you would forcibly carry home the truths contained in your talk, you should be able to relate a little story of human interest, concerning some child in that *particular* school. A story concerning a child in *some other* school will not do. If you should happen not to know such a story yourself, the nurse or teacher can always supply the material.

To illustrate my point: In the course of routine examinations a bright little girl of ten was examined. Her vision tested 20-200. In other words she had but 1-10 vision. Glasses were advised and she secured them. A few days later we interviewed her teacher, asking how Frances' school work had been since securing glasses as compared with her work prior to securing glasses. The teacher replied: "Well, doctor, Frances used to give me a great deal of trouble with her reading. There

was seldom a day that I did not have to keep her in for losing the place. I thought the trouble was due to inattention. Frances would cry and we would both be miserable. Since getting her glasses she never loses her place, never has to be kept in and both of us are happy."

Not only should the medical inspector make talks before Mother's Clubs, but he should also make them before teachers' meetings and all other similar gatherings. These meetings afford great opportunities for disseminating information in regard to medical inspection and in getting the good will and the coöperation of the parents and teachers. The medical director and inspectors should have weekly conferences with the school nurses and encourage them to offer suggestions from time to time as to what can be done to improve results. These conferences and the suggestions of the nurses have proved of great value to us in our work. Good nurses are always full of good suggestions.

The nurse is the connecting link between the department of medical inspection and the home, and as such, becomes the most important agent in this the 20th century sociological health work.

In conclusion we would like to impress upon you one point, particularly—in our opinion a point worth all others in getting results. It is this: Medical inspection of public schools cannot be done successfully if the inspectors and nurses go about it in an impersonal sort of way. They must have their heart in their work. They must be lovers of humanity for humanity's sake. If human interest and human sympathy are of value any where in the world, they are of especial value when we deal with what we are pleased to call the common people.



SESSION TWENTY-ONE

Room E.

Friday, August 29th, 9:00 A. M.

MEDICAL INSPECTION (Part Three)

ARNOLD L. GESELL, *Chairman*

DR. DEWITT H. SHERMAN, Buffalo, N. Y., *Vice-Chairman*

Program of Session Twenty-one

ARNOLD L. GESELL, Ph.D., Assistant Professor of Education, Yale University, New Haven, Conn. "Child Classification and Child Hygiene."

S. JOSEPHINE BAKER, M.D., Director of the Division of Child Hygiene, Department of Health, New York City. "School Medical Inspection in New York City."

JAMES STEWART, M.D., Supervisor of Hygiene, Board of Education, St. Louis, Mo. "Methods of Inspection of Children in St. Louis Public Schools." (Manuscript not supplied.)

EDWARD C. KIRK, D.D.S., Sc.D., Dean of the Dental Faculty, University of Pennsylvania. "Some Economic Aspects of Public Dental Service."

ALPHONSO IRWIN, D.D.S., Secretary-Treasurer New Jersey State Board of Examinations and Registration in Dentistry. "The Status of School Dentistry."

PIERCY B. McCULLOUGH, D.D.S., Chief of Dental Division, Bureau of Health, Philadelphia, Pa. "Control of Dental Caries in School Children."

J. G. COLTON, D.D.S., Dental Inspector of Schools, Providence, R. I. "Dental Inspection in the Public Schools of Providence."

W. E. STRUTHERS, M.D., Chief Medical Inspector, Toronto, Canada. "Medical Inspection of Schools in Toronto."

J. E. SHEPPARD, M.D., Brooklyn, N. Y. "The Economic Importance of Diseases of the Ear in School Children."

Papers Presented in Absentia in Session Twenty-one**(Read by Title)**

M. K. HÅKONSON-HANSON, Head Master in the Common Schools, Trondhjem, Norway. "School Doctors in Norway."

MIRIAM E. GRIFFIN, M.D., Medical Inspector of Schools, Manila, P. I. "Medical Inspection of Schools in Manila."

CHILD CLASSIFICATION AND CHILD HYGIENE

BY

ARNOLD GESELL

When knowledge is duly classified it becomes scientific. Classification is almost an instinct. It is a natural expression of intelligence. In the material world we are accustomed to classification; lumber, leather, wool, butter and eggs, raw material and the things we wear and eat are constantly classified by manufacturer and merchant. The new development of efficiency in industrial and commercial management has been built upon increasing analysis and classification of matter and movement. Increasing efficiency in educational economy calls for a more thorough-going classification of the raw material and product of our schools—the children.

The race has had a strange reluctance to interpret human nature in the same scientific spirit which for centuries has been shown to less personal objects. Consequently every school system of size gives quaint evidences of disregard for the radical inequalities which actually exist between children.

The Strategic Position of the Primary School. The primary room is the threshold of the school system; the kindergarten, the vestibule. Through this educational Ellis Island our future citizens pass; and it is a motley stream of incomers. We do not ask them to matriculate, we can not deport; we must accept them all as they are—normal, subnormal, atypical. No one can thoughtfully stand in the presence of such a motley assembly without feeling the misfortune it is to subject all of these children to substantially the same daily and the same annual treatment. Nor can one feel that a periodical medical inspection for medical defects meets the situation. From the standpoint of sincere, individualized child hygiene, what is demanded is a thorough-going diagnosis of the health and developmental needs of at least every exceptional primary child. The primary school is the port of entry; and of strategic importance for child hygiene. Here most of the special types of children may be recognized and registered. This is child classification at source; and it is the first step toward that consecutive, biographical supervision of special children which must become the policy of child hygiene.

Special Types of Children and Special Classes. Take an ordinary kindergarten and first grade with a combined enrollment of 100 pupils.

Among this number we may expect to find at least one child *feeble-minded* (unable, say, to draw a man or a house), one child who *stutters*, two or three who seriously *lisp*, another extremely *anemic*, one a badly *spoiled child*, another *infantile* (babyish, a year or two retarded in mental growth), still another *morally weak*. There will probably be one *negative child* (passive, colorless, physically flabby, mentally inert, uncommunicative, possessed of a feeble kind of imitation); one over-sensitive *nervous child* (with exaggerated sense of failure, over-conscientious, lacking in humor); one superficially *precocious* child; another distinctly *superior* (eager, ardent, imaginative, sociable). Without even including a score or more of eye, ear, nose, mouth and throat defectives, we have at least a dozen children in every hundred at the threshold of our public schools who demand special recognition (classification) and special attention from the standpoint of educational child hygiene. Here at the threshold is the place for timely treatment. For some of these children there is no better disposition than prompt assignment to a special class. By this time the special class method has been put into successful operation for thirteen different types of children.

Supplementary Classes. As clinical psychology develops, there will undoubtedly be a further classification and multiplication of special classes. The special class movement has a great future; the welfare, the hygiene of certain types of children depends upon their segregation. There will, however, always be a number of special types who demand special pedagogical treatment, but who can not be segregated. For these we must develop supplementary classes and other auxiliary devices. A supplementary class is one in which a child reports for short periods retaining his membership in a regular class. A good example is the Speech Improvement Class, organized by Dr. Reigart, principal of School 166, New York City. Here boys and girls of all ages throughout the school may improve their speech or overcome their defects entirely, with the assistance of a trained teacher. The class is purely auxiliary. The children do all the regular school work in the regular grades. The simple point is that here is a school where the function of speech is not neglected. The ideal is to discover the speech difficulties in the primary school grades; and to bring all children whose speech is not up to par from the first years under the continuous training and oversight of a speech improvement tutor. In his speech class the children are not "improved," and then forgotten. They are kept on record; watched and recalled if there is any relapse. Here we have an excellent illustration of that continuous supervision which should be the essence of child hygiene.

In addition to the supplementary class we might do much to develop

the possibilities of the supplementary teacher. By this we do not mean a promotion promoter, a coach or tutor, but rather a pedagogical hygienist or nurse, with a practical perception for the mental, moral and motor needs of special children. A nurse, by dictionary definition is "one who cultivates or manages carefully, who fosters the growth and development of." In the primary school in particular, this is the kind of supplementary "teacher-nurse" who is needed; to deal adequately with the babyish child, the timid child, the nervous, the unorganized, the negative child. From the standpoint of child hygiene these atypical children, who can not well be segregated, all need a specialized, semi-therapeutic treatment to reinforce and balance their development. This treatment can be supplied by a supplementary teacher in supplementary rooms—where special opportunities may be furnished for the kind of self-expression and discipline most suited to the particular groups of children. Such a teacher-nurse, of course, must have a practical training in the sciences of child hygiene, rather than scholastic pedagogy. The primary school is the Educational Ellis Island; and it should have detention facilities, where exceptional children can be classified and strengthened before their progress through the grades.

Classification Within the Special Class. The necessity of improved classification extends to the special classes themselves. Take the classes for the feeble-minded. The desirability of segregating the lower grade cases from the highest is becoming more and more apparent; this segregation will become quite practicable with the development of subnormal centers. A center is a domestic group of classified special classes. The discovery of the vocational aptitudes of morons is a further part of the task of pedagogical classification. As another example we have the classes for the crippled. In New York City at least it has been found that there is a high percentage of feeble-minded among this group. These demand special provision.

Many classes for foreigners are chaotic because the work of classification has not been carried far enough. We have at least five groups of non-English speaking pupils: (1) Those of primary school age. (2) Those of older age with normal, school attainments. (3) Those of older age with deficient school attainments. (4) Backward foreigners. (5) Feeble-minded foreigners. The last group is interesting. Many children pass as foreign because they do not speak English, when as a matter of fact their English is deficient because their minds are deficient. The classes for incorrigibles also reflect imperfect classification. One finds the physically defective, the misunderstood, misfit boy, the hopeless truant, the promising truant, the imbecile with criminalistic instincts, the defective delinquent, side by side. To attempt to

reform *all* of these is lamentable. The schools are likely to have, some day, special provision for irreformable defective delinquents.

The feeble-minded are also found among the blind, and rather frequently among the deaf and the dumb. Indeed they are found sprinkled throughout the extent of the elementary school, with a significant few near the barrier between the high school and eighth grade. This wide distribution of the feeble-minded is reason alone for the systematic, clinical classification of school children. It would be better to discover and to register all the feeble-minded in a city school system, even if our efforts went no further, than not to recognize their existence at all.

The Ungraded Class. But of all the special classes, the ungraded class (for so-called backward children) stands most in need of inventory. Here are stranded all the driftwood and flotsam which can not float upon the ordinary channels of the elementary school. The consequent diversity of the ungraded class membership is therefore often pathetically picturesque. This is the roll call for one such class in a large Eastern city: 24 boys, 16 girls; nationalities: Norwegian, French, Irish, Armenian, Italian, Austrian, American, Chinese. Names range from James Moriarity and Ong Yung to Arcangelo Christiano and Nishan Kalehadooarian. Ages range from 6 to 18 in this class; mentality ranges from giggling imbecility to ambitious intelligence; morality, from truancy, cigarette smoking and thieving to good behavior. Parentage noted in special cases includes a drunken mother, an over-indulgent mother an illegitimate father; and an insane father; and in three instances gypsies. Physical conditions range from partial blindness and deafness, and spinal trouble and anemia, to vigorous physical health. Think of the problem before this teacher, who may not even have a working definition of feeble-mindedness in her consciousness to aid her in her classification and in instruction.

Not all ungraded classes, of course, are as heterogeneous as this one. Occasionally one finds a class in which most of the children are merely pedagogically retarded, a truly backward class; and in other cases the class is homogeneous because perhaps 25 out of the 30 children are feeble-minded. These are the two extremes; but many classes favor the latter extreme. I have seen one ungraded class which was virtually a consolidation of two special classes for defectives.

I have compiled the results of a mass test of 156 pupils in six ungraded classes of an Eastern city. The tests were of three kinds; all performance tests. (1) A drawing test—every child was asked to make a freehand drawing by copy of a diamond, a hexagon and a five-pointed star. (2) A comprehension test—every child was told (once) to draw a square and to divide it into four equal parts. (3) A language test—each child was

asked to write a letter about "What I did last Saturday" (fifteen minutes were allowed for the letter).

The average and the median age of the group was 12. Of these 156 pupils, only 47 wrote a passable letter; 52, or one-third, wrote an intelligible (barely intelligible letter), while in 39 or 25% of the cases the letters were positively defective, *i. e.*, either altogether deficient or unreadable. Sixteen failed in the comprehension test, even with the opportunity of looking at the neighbors. Fifty-five (over one-third) were unable to draw a diamond; 69 failed to draw the hexagon; 94 the star. In one class there was only one pupil who performed the comprehension test with complete satisfaction; 10 divided the square into four parts, but very unequally; 22 failed entirely. In another class 15 of the letters written averaged a grand total of only six words (in the allotted time of 15 minutes) the other 15 letters netted the modest average of 50 words per letter.

In 60 cases the drawings, penmanship, content and form of the letters combined were so defective, that they gave eloquent evidence of feeble-mindedness. If by this partial testimony 40% of the enrollment appears to be feeble-minded, it is only safe to say that a thorough clinical testing would have revealed a still larger percentage.

Tardy Classification. The fact that the median age of the ungraded class is 12 is significant. The pedagogical history of a large number of the cases shows that they have spent from three to six years in the primary grades before being consigned to the ungraded class. This, of course, spells tardy classification; and a few years of maladjustment in the primary grades. The same tendency is generally shown with respect to the admissions to the special classes for feeble-minded children. Recently, I went over the records of 100 random cases of special children referred to the office of the examiner of defective pupils in New York City; only 20% were 8 years of age or less, while the remaining 80% were from 9 to 16 years of age; most of them about 11 or 12. The educational value of the special class for feeble-minded children is greatly increased if the child enters the class at 7 instead of 11. There are a great many cases in which we do not need the expensive psychological test of three years of failure in the primary grades to determine that a child is feeble-minded. If we concentrate our forces of diagnosis at the threshold of our school system we shall save much waste. Early sifting and early disposition make for economy and sometimes for prevention.

With such prompt classification at source, and with the elimination of the feeble-minded from the ungraded into the special classes, the strictly ungraded class becomes less necessary. The ideal is to build up within the primary schools such clearing-house facilities that we

recognize and interpret our exceptional children with reasonable promptness. The present tendency is to dispose of these children, at the posterior rather than at the anterior end of our school system. Often we wait until their presence in the regular grades becomes veritably intolerable. Many of our auxiliary classes, like the ungraded, have been literally thrust upon us. They do not represent a conscious, constructive interest in child hygiene.

A Classification Class and Teacher Diagnostician. The ungraded class should not be a dumping ground, attached to the grammar grades. It should be a classification class, supplementary to the primary school. Feeble-minded children have no place in it, at least after their status has been determined. I am speaking, of course, on the assumption that the schools are ready to provide special classes for the feeble-minded. When such special classes for all such special types are available, many of our ungraded classes will become much depopulated.

But as an adjustment and classification class, the ungraded class still has a future. We can never expect to classify all children by means of routine or even school laboratory tests. There are many borderline cases which deserve prolonged observation and intensive attention. Such observation and attention can only be furnished in a classification class under the direction of an expert and resourceful teacher diagnostician. Some day there will be a demand for this new form of pedagogical specialist, who working in conjunction with school psychologist and school physician, will be of great service in a program of discriminating child hygiene.

The refinement of child classification and the progress of child hygiene go hand in hand. The time is, of course, coming when all our large municipal school systems, and perhaps county educational systems, will have the equivalent of a department of child classification and special classes. In a few cities we already have a working suggestion of the possibilities. Our present classification of children is admittedly imperfect. To improve it we need among other things psycho-medical experts officially part of the school system, resident or semi-resident school hygienists, supplementary teacher-nurses, trained teacher-diagnosticsians, supplementary and classification classes. And all of these pueri-cultural forces will naturally concentrate their energies at the now unguarded gateway, the primary school where the motley stream of young humanity enters.

All the world is a clinic. Some day as adults these individuals will be classified by the rigorous test of actual life. It is the business of the public school to anticipate and to perfect the present day classification of adults, especially that part of the classification administered by

courts and charity organizations. Child classification is the basis of child hygiene. But it is more. The primary school may develop into a sociological clearing agency for the discovery and registration of all children, who when adults, may prove socially dependent, defective or dangerous. Child classification then becomes a part of the task of social hygiene as well.

SCHOOL MEDICAL INSPECTION IN NEW YORK CITY

BY

S. JOSEPHINE BAKER

In New York City the medical inspection, examination and treatment of school children is under the control of the Department of Health and forms one of the subdivisions of the work of the Division of Child Hygiene. 508 public schools with a registered attendance of 700,464 pupils and 206 parochial and other free schools with a registered attendance of 124,083 pupils are under supervision; a total of 714 schools and 824,547 pupils. The total appropriation for this work for 1913 is \$364,300, a per capita cost of 44 cents for the full year.

This cost per child is inclusive of all branches of the work, including administration and supervision, the full system of medical inspection and examination, follow-up visits in the homes, and ophthalmological, surgical and dental clinics.

The present school inspection staff consists of the Director, Assistant Director, Superintendent of Nurses, five Borough Chiefs, 16 Supervising Inspectors, 16 Supervising Nurses, 97 School Medical Inspectors, 16 Clinic Physicians and Surgeons, 10 Dentists, 191 School Nurses, 22 Clinic Nurses with the necessary Clerks and Typists for the clerical work, and hospital employees.

Since 1897, when the system was inaugurated for the detection and exclusion from school of children affected with contagious diseases, there has been a continual development of the work and at the present time its functions include:

1. Early detection and exclusion from school of cases of contagious disease.
2. The detection and treatment of neglected cases of contagious eye and skin disease.
3. Individual and group instruction of the children in personal hygiene.
4. Examination for the detection of non-contagious physical defects.
5. Follow-up visits to homes to insure treatment of physical defects.
6. Clinics for the treatment of eye, nose and throat and dental defects.

1. *The Early Detection and Exclusion From School of Cases of Contagious Disease.* With the exception of small schools in the outlying districts of the city, which are visited two or three times each week, each school in the city is visited each morning by an inspector or nurse and all children who have been found to be ailing in any way are referred by the teachers for examination. Indicated cases are excluded and reported to the central office; a diagnostician is sent to confirm the diagnosis, and either readmit the child to school or keep it under observation until the termination of the illness. In the school a tentative diagnosis is usually made, as experience has shown it is far safer to exclude a few children unnecessarily than to allow any ill child to remain in school. Every case of sore throat is excluded and a culture taken in each case. In order to doubly guard the opportunity for any spread of infection, the supervising inspectors receive each day a card giving the name, address, school, date of onset of illness and date of last attendance at school of every school child in his particular district, who has been reported during the previous 24 hours by any physician as being ill with a contagious disease. The supervising inspectors keep these cards filed by schools and classes. If two or more cases of contagious disease occur in the children in any one classroom, whether or not these children have attended school during the period of incubation, the supervisor visits the classroom, instructs the teacher in regard to the need of precautions and keeps the children under observation until the period covering the time of incubation has passed. If two or more cases of diphtheria occur in one class, a trial culture is taken from the throat of each child and if diphtheria bacilli are found, the affected children are excluded. The results of this preventive work have been excellent. During 1912 it was necessary to exclude only 4,000 children from school attendance and in no instance did an epidemic develop. During the four years since the organization of the Division of Child Hygiene, it has not been necessary to close any public school in the city on account of the presence of contagious diseases and in only a few instances have single rooms been closed for a period of a few days for a similar reason.

2. *The Detection and Treatment of Cases of Contagious Eye and Skin Diseases.* In addition to the cases found at the daily morning inspection, the inspector, at the beginning of each term, goes through each class room, inspects each child and refers for subsequent examination every case of contagious eye or skin disease and every child showing evidence of some physical defect; each case is indexed on a class index card with provision for notes of further care and treatment. Once each month the nurse makes a similar classroom inspection; all children

are referred to their physician or a dispensary for treatment. If the latter has not been obtained at the end of twenty-four hours the nurse treats the child in the school except where the disease is present in an extensive or acute form when the child is excluded. Trachoma is not treated by the nurse but neglected cases are cared for at the school clinics and allowed to attend school under the supervision of the nurse, if there is no secretion.

The need of care of these neglected cases who formerly were all excluded from school is responsible for the first employment of the school nurse in this country. The first school nurse was appointed in New York City in 1902. Her value in school treatment of these children with the consequent lessening of the number of exclusions, and decrease in loss of school time was demonstrated at once. Since then the field of the school nurse has broadened immensely but her usefulness in this branch of the work is as great as ever. In 1903, when there were only 8 or 10 nurses employed, 57,000 children were excluded from school for contagious eye and skin diseases; in 1912 only 4,716 children were excluded for this cause. Not only have the exclusions decreased but with the exception of pediculosis, every type of these diseases shows a marked reduction in the cases occurring.

In 1903 trachoma was found in twenty per cent. of the children; in 1912 it was found in only three per cent.

Notwithstanding the increase in the school population ringworm has been reduced from 5,958 cases in 1908 to 4,108 cases in 1912, a reduction of 31.1 per cent. and an average of only 8 cases to each school for the year. Scabies shows a reduction of 17.2 per cent. or from 3,133 cases in 1908 to 2,593 cases in 1912, an average of 5 cases to each school for the year. During the past year I took a party of students to one of our largest schools in a densely populated Italian district. I had previously instructed the nurses in twelve surrounding schools to bring some typical cases of skin disease to demonstrate. Not one case of ringworm in a school child could be found in this area and only two cases of nearly healed scabies could be produced. The gain in school attendance alone has more than paid for this part of the system of school inspection.

3. *Individual and Group Instruction of the Children in Personal Hygiene.* The large number of instances of defective primary teeth and the utterly inadequate facilities for free dental treatment have led to a necessarily special method of dealing with this problem. Preventive methods of oral hygiene seem to offer the solution. Each child with defective teeth is given a circular of instruction and is required to bring tooth powder and tooth brush to the school. The school nurse

conducts "tooth brush drills" with groups of the younger children, teaching them the value of a clean mouth and showing them how to keep it so. Pediculosis, that ever present and so far unsolved difficulty of school life, is cared for by a similar method. The children are given circulars of instructions as to treatment and are required to report to the nurse at regular intervals. If evidence of treatment is not shown they are excluded from school. While the number of cases has not appreciably decreased, owing to continuous home reinspection severe cases with live pediculi are rarely encountered now though they were formerly common. Out of 184,907 cases found in 1912 only 3,368 or 1.8 per cent. were of the latter type and therefore excluded.

In the classroom, individually and in groups, instructions are given by the school nurse on matters of personal cleanliness and hygiene. In all, during 1912, 160,957 such instructions and treatments were given.

4. *Examination for the Detection of Non-Contagious Physical Defects.* New York, in common with all cities, has recognized the alarming prevalence of sub-normal physical status of the school child. Our problem is probably more intricate than that of many other cities owing to the rapidly changing character of our population due to our prominence as a port of entry and the goal of the larger part of this country's immigration. In discussing the physical defects of school children it is difficult to confine oneself to any part of this complex subject.

The physical examination of children in the New York City schools was instituted in March, 1905. At that time no follow-up visits were made to the homes but the parents were notified of defects found by means of return postal cards, the return half to be used for reporting if treatment had been obtained. Under this system about six per cent. of the affected children received treatment. In 1908, with the organization of the Division of Child Hygiene, a staff of nurses was employed to make visits to the homes to instruct the parents in the necessary hygienic measures for the prevention and correction of physical defects and to urge the needed and proper treatment. Since that time, excluding the cases of defective primary teeth which are not made the subject of home visits, an average of 80 per cent. of the children have obtained the needed medical or surgical care.

The appropriation for 1912 allowed for the examination of 287,469 children, 41 per cent. of the number enrolled. Approximately this same number have been examined each year since 1908. In addition, each child treated is re-examined to determine if the treatment is effective. In the same year, 22,811 boys were examined to determine their physical fitness to take part in athletic contests and 40,501 exami-

nations were made of children who wished to leave school and obtain employment.

Each child entering school for the first time is examined upon admission thereafter special cases detected by the medical inspector or referred to the school nurse or teacher are examined, and third, the rest of the children are examined grade by grade. It would, I believe, be wise to provide a large enough staff to allow for the examination of every child once in two years with special cases examined each year or as much more often as necessary. The function of the school physician is not to make detailed diagnosis. It is not practical in the school to provide the necessary equipment and apparatus for performing refraction, nor for a complete exploration of the naso-pharyngeal vault. There is a tendency on the part of specialists in medicine to claim that experts in their particular specialty are needed in order that accurate diagnosis may be made. Such a plan is neither practical nor necessary. If carried to a logical conclusion it would mean that each child would be examined by at least six physicians. It is probable that some of the finer defects escape observation. For instance, possibly some of the smaller cavities in teeth may be overlooked, but when we realize that it is only possible to obtain treatment for about 10 per cent. of the cases of defective teeth on account of lack of facilities for dental treatment, are we warranted in spending any added amount for diagnosis rather than for treatment? A community is justified in the expenditure necessary to ascertain that there is some deviation from the normal and for the needed measures of school and home hygiene required to prevent or to cure the wrong conditions. Beyond that the matter should be left to the private physician or dentist to make the detailed diagnosis and provide the proper treatment. Following this procedure in New York City each defect noted is classified broadly as defective teeth, defective vision, defective hearing and so on. Nasal or naso-pharyngeal obstruction sufficient to give objective symptoms of nasal occlusion is designated as defective nasal breathing; true hypertrophy of the tonsils is definitely classified. When any defect is found the parent is notified by means of a special blank calling attention to the defect and stating that the child should be taken to the family physician for treatment. Where no attention is paid to this notice, a follow-up notice to the same effect is sent the parents by the principal of the school. If the child still remains untreated the nurse visits the home to explain to the parents the need of attention and to urge that the child be taken to the family physician. Only in case the family are wholly unable to employ a physician, is the child referred to a dispensary. In no instance and under no circumstances are the medical inspectors allowed to treat these children.

It is of interest to note that an average of 58 per cent. are taken to private physicians and 42 per cent. to dispensaries.

The incidence of physical defects in school children has materially decreased in the past few years. In 1909, 13.1 per cent. of the children examined has defective vision; in 1912 this had been reduced to 10.4 per cent. The number of children suffering from defective nasal breathing has decreased from 18.7 per cent. in 1909 to 7.6 per cent. in 1912, while hypertrophied tonsils were found in 22 per cent. of the children in 1909 and in only 10.4 per cent. in 1912. The children examined during these periods were approximately the same age groups.

NON-CONTAGIOUS PHYSICAL DEFECTS FOUND AND TREATED

	1909		1912	
	New York City	Percentages	New York City	Percentages
Number of physical examinations made	231,081	.....	287,469	.....
Number found needing treatment	172,112	.....	206,720	.....
Number found with associated defects	102,150	44.2	87,361	30.4
Number found with defects of teeth as only defect.....	69,962	30.3	119,359	41.5
Percentage of those examined needing treatment ..	74.48		71.9	
	per cent.		per cent.	
Defects found:				
Defective vision.....	30,408	13.1	21,078	7.3
Defective hearing.....	2,340	1.0	1,206	0.42
Defective nasal breathing.....	43,393	18.1	21,931	7.6
Hypertrophied tonsils.....	50,934	22.0	30,021	10.4
Tuberculous lymph nodes.....	810	0.35	.....	.....
Pulmonary disease.....	744	0.32	335	0.12
Cardiac disease.....	1,503	0.65	1,597	0.55
Chorea.....	940	0.40	915	0.31
Orthopedic defect.....	1,461	0.63	721	0.25
Malnutrition.....	7,249	3.1	8,303	2.9
Defective teeth.....	131,747	57.0	142,168	49.4
Defective palate.....	324	0.14	.....	.....
*Number reported treated.....	84,968	83.2	58,312	66.75

*These figures do not include children reported with defective teeth as the only defect, whose treatment consisted only of instruction in oral hygiene.

5. *Follow-Up Visits to Homes to Insure Treatment of Physical Defects.* The greatest advance made in school medical inspection since its inception has been the employment of the school nurse. I have already spoken

of her value in the school, but her services are of even greater importance in the home. Here social, economic, and racial questions are presented for her power of adjustment. There is hardly a problem in our social system that she is not called upon to solve. The difference between the 6 per cent. of children treated without her employment and the 80 per cent. treated as a result of her efforts bears witness to her efficacy but her function in prevention of physical ailments is even greater than her use as an agent to secure correction. The relation of home hygiene to physical ill health in childhood is of equal if not greater importance than the relation of school hygiene to the same subject. In the home there is no broad supervision as there may be in the school. Each family, each child must be considered individually. The diagnosis of a physical defect by the medical inspector is the index; the completed work is the function of the nurse.

During 1912, the nurses made 216,554 home and dispensary visits.

6. *Clinics for the Treatment of Eye, Nose and Throat and Dental Defects.* During 1912, six clinics for school children were opened. These clinics are in reality small hospitals, having a dispensary service for refraction, contagious eye diseases, and nose and throat diseases, and hospital facilities for operations for trachoma and the removal of adenoids and hypertrophied tonsils. They have been located in the parts of the city having inadequate dispensary facilities. The common method of operating for adenoids and hypertrophied tonsils in dispensaries has been unsatisfactory and in many instances serious results have followed. Anesthetics are rarely used and children are sent home as soon as the operation is completed and the bleeding has ceased. In consequence of the lack of anaesthesia the operation is often hurriedly and incompletely performed and the child suffers a severe nervous shock. The early return home results in danger from septic infection and secondary hemorrhage. In the Department of Health clinics the children are required to report the afternoon before the day of operation. They are kept during the night, regularly prepared for the operation which is performed under full nitrous oxide gas and other anesthesia on the following morning and the child is then required to remain in the hospital under close observation for the following 24 hours. Up to this date 2,492 operations have been performed by this method with entirely satisfactory results in each instance.

Six dental clinics were opened early this year. In order that the limited facilities might be as useful as possible only those children are treated who are referred by the school inspector. These children are the selected cases where constructive as well as preventive measure offer the best ultimate results.

The clinics are all located in separate buildings each in the center of a group of schools. The need of the increase in the number of these clinics is shown by the fact that more than twice as many children are necessarily refused treatment as the number possible to care for. In the Borough of Brooklyn alone we now have over 2,500 children on the waiting list for operations for adenoids and hypertrophied tonsils. The parents of these children are unable to pay a private physician and there are no hospitals in the vicinity.

Five factors are required in the proper working out of our program: the Department of Health, which performs the work; the Department of Education, which has jurisdiction over the schools; the medical profession, who must be responsible for the final corrective medical efforts; the parents, who are the focus of our educational efforts, and the children, for whose benefit and in whose behalf the system is devised. Nothing short of complete and willing coöperation on the part of each and every one of these groups can insure success.

The medical inspectors and nurses are required to coöperate in every way with the principals and teachers and to consult with them in regard to classroom conditions affecting the health of the children. In the schools where an equal interest and readiness to coöperate is found on the part of the principals and teachers, the standard of health of the pupils is very high. In the schools where such coöperation is not obtained the results suffer accordingly.

In New York City the hygiene and sanitation of the schools with matters pertaining to lighting, ventilation, heating, cleaning, classroom furniture, and adjustment of the curriculum to the individual child are under the control of the Board of Education which has special committees in charge of the various features. So far no adequate program for the proper control and adjustment of these important matters has been made effective. Recently investigations have been made relating to these subjects and it is possible that needed reforms in the hygiene of the schools may result. The order of the Board of Health that the common drinking cup be abolished has been generally observed in the schools and one of the most prolific sources of the dissemination of contagion eliminated.

School medical inspection has been successful in New York in demonstrating that the schools need not be foci for the dissemination of contagious diseases and that the incidence of physical ill health and abnormalities may be appreciably lowered by proper health supervision.

DISCUSSION OF

S. JOSEPHINE BAKER'S PAPER

BY

JOHN W. BRANNAN

Dr. John W. Brannan of New York stated that he had been much impressed with the thoroughness of the work in New York, as outlined by Dr. Baker in her paper. Although he had lived in New York for many years and had thought himself pretty familiar with the methods of the Division of Child Hygiene of the Department of Health, he had no idea that the inspectors and examiners covered the field so completely. He was also much pleased to learn that the defects found in the children were corrected in 80% of the cases. He was especially impressed with the success because at a previous session, where papers were read by gentlemen from Washington, Buffalo, and Boston, great discouragement was expressed because of the impossibility of securing the correction of a large proportion of the defects after they had once been discovered by the inspectors. He agreed entirely with the position taken by Dr. Baker as to operations for adenoids and enlarged tonsils. In his opinion these operations should always be performed under an anaesthetic and the children should be under observation in a hospital throughout at least twenty-four hours, including the time before and after the operation. It was the practice in the Department of Bellevue and Allied Hospitals to keep the children brought by the teachers and others for operation over night, so that the operator might be sure that the child had had no food before operation, and that hemorrhage should not occur after operation. This was the plan followed in the various special hospitals of New York, and he believed that general hospitals should pursue the same method. Insofar as the tonsils are concerned, the operation now preferred is tonsillectomy, with careful dissection out of the tonsils, so as to avoid injury to the pillars of the fauces. In the four hospitals with which the speaker was connected in New York, some forty to fifty such operations were performed every week, and it might be well if influence was brought to bear upon all the hospitals in the city so that they might all do a certain share of the work, as the facilities which are to be found only in hospitals are so important in the safe and proper performance of the operation.

SOME ECONOMIC ASPECTS OF PUBLIC DENTAL SERVICE

BY

EDWARD C. KIRK

It is now about thirty-five years since Professor Robert Koch of the University of Berlin demonstrated the relation which the activities of certain micro-organisms bear to the causation of disease and finally established the soundness of the germ theory of disease causation which for centuries previously had been the subject of controversy among medical men and scientists. Koch's researches placed the germ theory of disease beyond the limits of further controversy in so far as its fundamental principles are concerned, and all subsequent investigations of the nature of bacterial action in its broader expressions, have incidentally further confirmed the soundness of the original fundamental deductions of Koch, out of whose pioneer work has grown the modern science of bacteriology.

Almost coincidentally with the announcement of Koch's discoveries attention was centered upon the human mouth as a focus of bacterial activity. The late Professor Willoughby D. Miller, a student in Koch's laboratory and Professor of Dentistry in the University of Berlin, began a series of researches into the nature and activities of the bacterial flora of the human mouth primarily with a view to solving the nature of the destructive process known as tooth decay or dental caries, from which study he was ultimately enabled to announce the discovery of the exact nature of the causation of dental caries, showing that it was the result of the activities of a special class of micro-organisms which had the power to split up certain sugars into lactic acid, which acid was the agent responsible for the disintegration of the hard structures of the human teeth, bringing about their decalcification in localized areas forming cavities characteristic of the disorder, the final stages in the destructive process being accomplished through the agency of certain other bacterial organisms which set up putrefactive changes in the organic matrix of the tooth structure.

The researches of Miller extended to other classes of micro-organisms which he found to be more or less constant inhabitants of the human mouth with the result that he was able to announce the finding of between forty and fifty varieties of bacteria as common inhabitants of the oral cavity having in greater or less degree disease producing functions. The studies of Miller stimulated the interest of a host of investigators in the

same general problem, so that it may be said that to-day scientific authorities are united in the belief that the human mouth is not only the principal portal of entry for the great majority of disease producing germs which find access to the human body, but that the mouth itself is an incubator of germ life in which the requisite conditions of temperature, moisture, and food supply for a great variety of disease producing organisms are more or less constantly found, and therefore a source of infection not only to the tissues and organs comprising the mouth, the dental organs and associated parts, but through the immediate connection of the mouth with the alimentary tract, is a source of infection to the entire body.

The most obvious and it may be said dramatic expression of bacterial activity in the infected mouth is the destruction of the masticatory apparatus by the disease known as dental caries, a disease which affects the human race almost universally and which is most active in the mouths of children of school age. Statistics carefully compiled in nearly all civilized countries show that about ninety-five per cent. of children of school age suffer more or less from the destructive process of tooth decay. Viewed simply as an interference with the integrity of the masticating mechanism and consequent injury to the health of school children tooth decay is not by any means the negligible factor that it is popularly considered to be. So commonplace is the disorder that our familiarity with it has tended to breed a dangerous attitude of contempt toward it as one of the minor ills like the less dangerous diseases of childhood which we have come to regard as part of the necessary experiences of youth. Whereas investigation has very clearly shown that not only is the nutrition of the child more or less seriously impaired by the interference with mastication which necessarily results from tooth decay, but that coincident with the carious process and as a sequel thereto a variety of bodily infections may occur and that profound disturbances of the nutritive mechanism as well as acute and chronic nervous disturbances may be the direct consequences of the carious destruction of the teeth.

In the American System of Dentistry, Volume III, page 434, Professor Albert P. Brubaker publishes a carefully compiled classification of the various reflex neuroses associated with dental pathology showing that profound disturbance of vision, of hearing, of the muscular system, of the viscera, trophic and vaso-motor disturbances, facial and other neuralgias, paresis, tetanus, headache, epilepsy, hysteria, chorea and insanity not only may have, but in many well authenticated instances have had, their origins in pathologic disturbances in and about the teeth, and that all of the pathologic conditions above enumerated have been

cured and markedly relieved by the elimination of the dental irritation to which they owed their origin.

In making this assertion it is not to be understood as meaning that when a child is suffering from any of the disorders mentioned in the foregoing category it is to be assumed that the disorder is necessarily of dental origin, but it is intended to mean that given certain predisposing bodily conditions it is quite possible for a dental disturbance to express itself in a reflex way by the production of any of the disorders named in the compilation here quoted from Brubaker. Both medical and dental literature furnish records of abundant examples of direct pathologic connection between dental and oral diseases and profound morbid processes in distant organs and tissues of the body.

It will be seen then that an infected mouth may give rise to the production of three classes of disorders of bacterial origin: First, because of its universality the most important is dental caries and its sequelae; Second, toxemias or greater or less intensity from the continued absorption of bacterial end-products arising from infection of the entire gastrointestinal tract via the mouth cavity and, Third, direct bodily infections from the dental and oral tissues due to invasion of the supporting structures and alveoli of the teeth by disease producing organisms. Perhaps the most important example of this latter class of invasions arising from the infected oral cavity are the tubercular infections of the mandibular bone and of the cervical lymphatic glands due to invasion of these structures through the root canals and alveolar sockets of decayed teeth, thus establishing foci of tubercular infection which in due course involve more distant bodily structures in susceptible individuals. The literature of the subject abounds in reports of tubercular infections having their origin in the defective tooth structures.

A fourth class of bodily disorders having their origin in the dental structures is the class of reflex nervous and nutritional disorders directly caused by difficult or interrupted dentition. The process of eruption of the two dentures covers almost the entire school life of the child, beginning in infancy and not attaining its completion until the seventeenth or eighteenth year when the third molars of the permanent denture normally come into position. Any marked interference with the eruption of the teeth due to malformation of the jaws or interference with the general bodily nutrition of the child may result in the impaction of one or several teeth with consequent pressure upon the nerve endings of branches of the great tri-facial nerve, setting up disturbances which are reflected to important nerve centers and thence to the distributions of other important nerves producing in many cases reflex nervous manifestations of the most serious character. Many of the choreas of childhood frequently attributed to central nervous disorders or to general

nutritional or systemic disease have their unsuspected origin in the peripheral irritation set up by impacted teeth causing interrupted or difficult dentition. Such reflex neuroses may make their appearance at any time during the teething period of life, being not infrequently manifested in connection with the eruption of the third molars of the permanent set as late as the eighteenth year.

Again let it be understood that it is not here claimed that all reflex neuroses, choreas, ocular disturbances, defects of hearing, etc., are produced by reflex dental irritation. On the other hand there is abundant evidence to prove that many of the choreas of childhood, epilepsy, hysteria, strabismus, chronic headaches, neuralgias and even dementia praecox owe their origin to peripheral dental irritations caused by difficult eruption or impaction of teeth during the dentitional period.

From the foregoing it must be evident that the opportunities offered by an unclean mouth for the development of bacterial infections become the prolific cause of a variety of interferences with general bodily health which in their turn become the cause of a large percentage of physical and mental disabilities among school children. No argument is needed to enforce the importance of a full recognition of these sources of disability and the necessity of their practical eradication so far as our present knowledge and means at our command will permit. The recognition of the facts imposes the duty upon us on the broad grounds of humanitarianism and for the purpose of increasing the standard of bodily and mental efficiency of the school children who are to take upon themselves the duties of future citizenship, for I take it that it is the general purpose of this congress to take into consideration all of the hygienic factors that affect the efficiency of the individual as well as that of the community with a view to ultimately putting into effect such measures as will tend to reduce the sum total of human disease and suffering, improve the standards of healthful living and prolong effective and enjoyable human life.

It is therefore unnecessary that I should do more than allude to the humanitarian side of this important problem, nor is it necessary that I should burden your attention with the statistical matter and reports of cases which have served as a basis for the deductions that I have placed before you relative to the importance of dental and oral disorders as a source of physical and mental disabilities, as these are data easily accessible in the standard literature of the subject. It is, however, of importance that full consideration be given to the question of the resources at our disposal which will enable us to eliminate these factors of ill health and inefficiency among the rising generation of future citizens who constitute the present generation of children of school age.

It is unfortunate that in the consideration of the practicability of bringing the resources of modern dental service to bear upon the problem

of eliminating these admittedly preventable dental disorders in the mouths of school children through the agencies of the free municipal dental service, our point of view as to the economic aspects of the problem has been largely colored by the standards of cost of dental service as that service is valued in accordance with the average charges of the private dental practitioner. Hence it is that school authorities, boards of health, and governing bodies of our municipalities have hesitated to appropriate funds to pay for the free dental treatment of school children on the assumption that such treatment would involve a burden of expense greater than the administration could legitimately carry. If the same line of reasoning were applied to the furnishing of free medical and surgical service by municipalities and the assumed cost were to be estimated in like manner upon the scale of charges made by medical and surgical specialists in private practice, the dependent poor of our centers of population would undoubtedly be deprived of the inestimable benefits of hospital service and medical and surgical attention which they now receive free in every city and town of considerable importance throughout the world.

Our knowledge of the direct relationship which dental disorders bear to physical disabilities and various forms of bodily ill health is of but comparatively recent growth and recognition of the far-reaching and intrinsic importance of the subject has not yet reached that stage of development and general acceptance which places it in the category of common knowledge, hence the developmental stage of the whole question furnishes perhaps a sufficient explanation why dental and oral treatment has not been generally included in the free health service which municipalities generally render to their communities. The establishment of free dental clinics under municipal control is, however, being gradually accomplished and the experiments thus far instituted in that direction have developed most interesting and valuable results. The character and extent of dental service which can be properly rendered in the free dental dispensary under municipal control is essentially different to that which would be rendered by a private practitioner to a class of patients financially able to pay a commensurate fee for the more elaborate character of service required. The ideal of the free dental clinic being exclusively the prevention and relief of suffering and disease at the lowest possible cost to the taxpayer, the artistic and cosmetic ideals of the private practitioner are largely excluded and as they constitute the principal elements of the cost of private dental service, it has been found that by their elimination in hospital practice a relatively large reduction in expense results.

The municipal free dental clinic established several years ago in Philadelphia under the direction of the Bureau of Health with a volunteer

corps of dental operators who served without compensation, was ultimately reorganized by Act of Councils providing for a staff of twelve paid operators at \$700 each per annum, and a Chief of Clinic with a yearly compensation of \$1,200. An attendant nurse was also provided for at a yearly salary of \$800. A sum of \$1,500 was appropriated of which \$1,000 was for equipment and the balance of \$500 was for maintenance. I am indebted to Dr. Piercy B. McCullough, Chief of the Free Dental Clinic, for the following data which have enabled me to present to you the cost per capita for the effective dental service which has been rendered free to the school children of Philadelphia from January to June, 1913, inclusive, covering the principal period of the school year:

Total number of patients treated.....	6,238
Total operations.....	17,666
Number of operations per patient.....	2.83
Total cost of salaries, maintenance, supplies, etc., for the same period of time.....	\$5,640
Making the cost pro rata of service for each patient.....	.90
Or 32c. per operation.	

The records of the Dental Clinic present an interesting array of figures exhibiting in detail the extent and character of the dental defects among public school children of Philadelphia and data which strongly indicate the kind of service needed to correct and remove this obviously preventable source of physical and mental deficiency, but, interesting as the analysis of these important records would be, the limitations imposed by the title of this paper forbid more than a reference to their value as bearing upon the psycho-physiological aspects of the public education question. The bearing of the data herein presented upon the economic aspect of the public education problem is, however, of striking importance not only in its relation to the efficiency of the child of school age but particularly in relation the extension of this beneficent service to public school children generally under the direction and control of municipal boards of health where such service naturally belongs and where alone, under existing social conditions, it can be effectively dispensed.

Reliable sources of information give the following figures as representing the cost per pupil per year of education in the public schools of five of our principal cities:

New York.....	\$42.46
Chicago.....	33.01
Philadelphia.....	36.69
Boston.....	49.38
Washington.....	40.41

Of the various disabilities which operate to retard children in their school progress and necessitate their retention in grades through which under normal conditions of physical and mental health they should have regularly passed, it is safe to estimate that not less than ten per cent. are of preventable dental origin. Investigation has shown that one-third of the 148,000 pupils in the public schools of Philadelphia are over age for their school grade; 483 children have been thirty months or more in the same grade while 9,486 pupils have been recorded as beginning for the third time in the same lessons. From these data it has been contended with much justice that many children are mentally incapable of pursuing their studies. The direct causal relation which physical defects in general bear to mental inefficiency is one of the demonstrated deductions of modern psychological research and is now beyond the limits of controversy. I have placed the percentage of dental disorders at not less than ten in the total of physical defects that operate to bring about the retardation of the child in his educational development.

I am without data as to the proportion of school children in Philadelphia whose retarded educational progress is due to physical defects. Figures presented in the official report of Minister of Public Instruction of New South Wales indicate that in that division of the Australian Commonwealth between twenty and twenty-five per cent. of pupils, as the report states, "were suffering from physical defects which appeared likely to interfere with physical development and their progress in school work." From the close parallelism of data relating to anthropometric measurements and general physical conditions resulting from examinations in America and European countries in comparison with those given for New South Wales it is fair to presume that from twenty to twenty-five per cent. is a conservative estimate of the extent of physical defects which ordinarily exert a retarding influence upon the progress of public school children. Using that figure as a basis it then appears that if it cost the city of Philadelphia \$1,357,530 to maintain one-fourth of its public school children because of physical defects an additional year in a grade beyond which they should have, under normal health conditions, regularly advanced, and if ten per cent. of this amount may be fairly charged to remedial dental defects, then \$135,753 was expended upon the education of retarded children which might have been saved to the taxpayer at a cost of \$3,330 for free dental service.

I have attempted to arrange the data here presented in such manner as will portray from an economic standpoint the gravity and importance of the need for free dental service to public school children as a legitimate activity of our municipal departments of public health. I am well aware that the estimates given fall short of scientific accuracy and as

they are based almost exclusively upon the records of a single municipal free dental clinic, are therefore an insufficient basis for any broad generalization. However, the single instance of the Philadelphia Clinic has demonstrated that an average expenditure of 90 cents per child will secure freedom from a large source of dental disability and that the ratio between that small item expended for conservation, as against the cost of additional education of retarded children by reason of dental disability is a strong instance of the general truth of the proposition that in matters of health, conservation is less costly than the care of the human wreckage produced by disease.

THE STATUS OF SCHOOL DENTISTRY

BY

ALPHONSO IRWIN

Original Status. In the beginning, school dentistry possessed no status whatever, nay, more, it was regarded with suspicion and distrust, ridicule and contempt, aversion and hostility. Many looked upon it as a visionary idea promulgated by enthusiasts; some educators declared it "too paternal;" if the teeth, why not the eyes, the ears, the nose, the throat—where would this movement end? Others regarded it in the light of an unwarranted intrusion upon domestic functions, and the untutored public believed it to be a clever scheme of providing employment for idle dentists; while friends opined that, at its best, it was an impracticable plan to take care of children's teeth. Medical and surgical clinics have developed along similar lines, like difficulties have been encountered and overcome.

Practical Status. During this state of affairs, several dentists (among them W. Macpherson Fisher of Dundee, Scotland, Ernst Jessen of Strasbourg, Forberg of Stockholm, Lemburg of St. Petersburg, Ricer of Svendborg, Richard Grady of the United States) were proving to the world that school dentistry not only possessed a theoretical status, but that it had passed through the experimental stage, thanks to their unrewarded and, at that time, unappreciated efforts. The foundation of the movement was laid almost simultaneously about 1884 in Scotland and Germany, Sweden and the United States. In 1898, when the School Dentists' Society of Great Britain was organised at the residence of Mr. Sidney Spokes in London, with Mr. William Fisk as secretary, we may consider that the status of school dentistry was established upon a practical basis in Great Britain at least. The record made by over a hundred school dentists since that time has won universal commendation. The statistical compilations of George Cunningham of Cambridge have been invaluable, while the German statistics have been models of excellence. The statistical status of school dentistry is based upon the records afforded by both of these countries, supplemented by Swedish and American data.

Educational Status. My personal interest in school dentistry dates back to 1882, but the futility of attempting to establish school clinics at that time was most convincing. In 1902, I addressed letters to all the city and county superintendents of public schools in New Jersey,

as well as to all State superintendents in the United States, with a view of ascertaining the status of school dentistry in this country. Opinion was about evenly divided then as now in regard to the desirability of introducing dental clinics into our public schools. The 82 replies received were significant for their courtesy and intelligence. Among the questions asked by me was this: "Do you favor the appointment of dentists to take care of the teeth of pupils in public schools?" The State superintendent of Illinois struck the keynote of the problem in his answer: "Not until the people are educated to some extent in the subject." Therefore we conclude that school dentistry in the United States was in that stage known as the educational stage.

Educators realized that it is impossible for a child with a mouth full of aching or diseased teeth to fix his attention upon his lessons; they knew that mental concentration is incompatible with oral sepsis; that a rebellious stomach makes a cranky student, and that irritated nerves produce an obstreperous pupil. But at the same time, our educators realized that in order to rectify this condition, the public must be first convinced of the need of the proposed innovation, hence it was necessary to institute and carry on a campaign to enlighten the commonwealth in regard to the advantages to be derived from the establishment of school clinics. The result of this campaign so far is that 69 cities in the United States have school dentistry in some phase of development.

Official Status. The educator is most keenly alert to the demands for increased efficiency, consequently governments regard educators as important allies. Our educational systems are devoted to the effort to obtain increased efficiency; governments demand of military and naval schools better soldiers and better sailors. Recognizing this demand, governmental and educational authorities enlist the services of all men, including dentists, to raise the standard of their fighters. Powers of the first class must maintain their fighting standard. Military and naval experts know what we are so familiar with, namely, that with better teeth men have better mastication, better insalivation, better digestion, better assimilation, better nutrition, and better health generally; consequently, governments will secure better fighters. Masticatory efficiency enhances endurance, fortitude, strength, patience and valor, all of which attributes the fighter must possess. The reason that England and Germany lead in school dentistry is *not* because the teeth of school children need attention so much, but because they are contesting for *supremacy*. *Supremacy* upon land and sea, industrial supremacy—*Colonial supremacy*. Hence school dentistry is recognized by the state, and the official verdict is, no military or naval academy

is complete without its dental clinic. In England, Germany, France, Russia, Sweden and the United States, governmental recognition of the status of the dental clinic is most significant. But the status of the dental clinic does not end with its adoption at West Point, Annapolis, or in the imperial universities of Austria, Germany, France, Great Britain, Russia and Sweden, for in some countries its exact position is defined by national legislation. The naval law of the United States ordains that the rank of the dentist is identical with that of the first grade medical officers. Is not this decree official recognition that the work of the dentist is on a par with that of other specialists in the medical profession? Does it not likewise carry with it the legitimate inference that dental clinics are on a par with medical and surgical clinics? This, then, is the *official status of school dentistry*.

Pedagogic Status. Pedagogues have not only heeded the clamor of competitive forces throughout the world, and been responsive to the relentless cry for greater efficiency, but they are themselves foremost in advocating intelligent methods of attaining greater proficiency amongst school children. Their reception of dental clinics instituted for the benefit of pupils is only one of the many indications of this progressive spirit. When universities such as Columbia, Harvard, Pennsylvania, Michigan endorse school clinics, and members of their respective faculties become actively engaged in promoting the work, the status of school dentistry is placed upon the highest possible level. To many universities do we owe most effective workers in behalf of the cause, and when we name such men as Aguilar, Christensen Forberg, Grevers, Guerni, Goden, Jessen, Kirchner, Rosenthal, Shumamine, Van der Hoeven, Volz, Watkoff, Zilz; and in the United States, Kirk, Hunt, Potter and Wheeler, we add a personal lustre which elevates school dentistry to the most honorable position from a list of the most painstaking dental pedagogues on the face of the globe. Knocking admission into the public schools with such an array of eminent educators, school dentistry should meet with a favorable reception. Possessing the approval and coöperation of the most illustrious universities in twenty-two countries, members of the profession should concentrate all their energies in a great universal, united, synchronous and systematic effort to establish dental clinics among all nations and in all parts of the world.

Journalistic Status. Every agency known to modern times has been utilized to project this educational campaign in behalf of school hygiene, oral asepsis and dental clinics. The programme has been carried out so effectively that nowadays each time we pick up a dental journal, we note the ever-increasing attention given to school dentistry. This attention is not limited to the 116 dental journals of the world,

but is also manifested by medical, educational and other periodicals. Perhaps the most unique literary productions on the subject are those which appear from time to time in the popular monthlies and weeklies. These are potent agencies in awakening public interest in this much-neglected means of self-preservation, because they place the matter before the reader in so pleasing a manner that his mind is captivated and his coöperation won.

The interest of the great daily newspapers in our larger cities has brought about marvelous changes in public sentiment regarding the desirability of introducing free dental clinics in the public schools; indeed, in the United States it would have been futile to introduce school dentistry anywhere without the aid of the press. May we not therefore congratulate hygienists that school dentistry has gained favor from the editorial staff and literary lights, for, among all our professional men, none are more competent judges of the meritorious service rendered in taking care of the teeth of school children. We also regard this as a fitting opportunity to pay our tribute to the generosity of the press in so revolutionizing public sentiment and preparing the way for the crusade of conservation and prophylaxis.

Numerical Status. Statistics, however incomplete or isolated which are otherwise both authentic and reliable as far as they cover the population, afford startling revelations in regard to the possible status open to school dentistry. For instance, it is estimated that about 500,000,000 of the 1,700,000,000 inhabitants of the world are of teachable age. Persons of teachable age constitute the scholars of the nations, and it is from the scholars that the pupils in the public schools come. They constitute the membership of the public schools. About 300,000,000 of these persons of teachable age are computed to be under sixteen; hence, school dentistry concerns about 300,000,000 of the juvenile population of the earth who should be (although all are not) enrolled in schools. No one has attempted to compute how many of these children actually attend school, much less estimate how many have heard of school dentistry. Incomplete statistics would seem to warrant the assumption that the teeth of about 3,000,000 children have been operated upon, or at least inspected by dentists. If one per cent. is any basis upon which to claim a numerical status for school dentistry, then we have at least gained a foothold throughout the world, but the glaring disparity between the number of pupils reached and the vast number uncared for makes a more vivid impression upon the mind. In the very weakness of the (computation of the) numerical status of school dentistry lies the strength of the argument in favor of establishing school dentistry upon such a basis that it shall embrace the school

population of the world. Then, and not until then, will school clinics fulfill their destined function, which is, to accomplish the hygienic conservation and ultimate salvation of the race.

We have declared that the strongest argument in favor of the propagation of school dentistry is its statistical status. We would next add to this argument the fact that the tests of time, experience, and work actually performed by dentists in twenty-two different civilized countries have placed school dentistry beyond the theoretical and experimental stage, and raised it to the level of an established beneficence. If the statistical testimony gathered demonstrates the benefit derived from the work of about 500 school clinics already instituted for the improvement of oral conditions in a part of the school systems of the world, then we claim that similar benefits should be extended to the students of all school systems.

Professional Status. But there is another phase to this viewpoint: the honor of the dental profession is involved. As professional men, it is incumbent upon us to see: 1st, that past omission is atoned for by future service; 2nd, that expert knowledge gained through the sufferings and dental defects of previous generations be applied practically for the comfort, improvement, comeliness and, above all, to add to the mental and physical efficiency of coming generations; 3rd, that observation, experience and clinical work have proved that in order to introduce the principles of oral hygiene to the public, we must first institute school clinics and work out the problem through the agency of school children; 4th, that every dentist owes a duty to his country as well as to his profession; 5th, that the status of the school dentistry of the future will be determined by the faithfulness and success with which the four previous propositions are carried out by the dentist. We therefore conclude that the dentist himself must be a party to the establishment of the position of school dentistry.

Increased Efficiency. Eliminate the hygienic status which school dentistry now occupies, except to note that unless we hygienize the oral cavity of the *progeny* of the 1,000,000 immigrants landed annually upon our shores we expose *our* children to the danger of inoculation to some of the most *loathsome* diseases known to science. Next consider the underlying agencies at work shaping the destiny of school children. These agencies are too often lost sight of, which is all the more reason why they should be considered here. They are the potential forces compelling the establishment of school clinics; ultimately they will command that dental clinics be established, and it is incumbent upon the dental profession to be prepared to obey this command. We are confronted by the irresistible pressure exerted by the rivalry of nations.

In some parts of the world, the supremacy of government is at stake; in others, the rule of the governors over the governed hangs in the balance; among the masses, there is a life and death struggle going on. Add to these conditions the relentless demand of competitive forces, commercial, financial, industrial, educational, political, professional and social influences, which are spurring people (with furious energy) towards increased efficiency in the arts, sciences, literature, in all industrial pursuits, in naval armament, in military equipment, and in public service. How is anyone to attain increased efficiency without physical perfection? How can physical perfection be attained without healthy organs? These are the great factors which underlie and determine the status of school dentistry; forces *without* rather than forces *within* the profession. These forces all focus upon one point, namely, *increased efficiency*. As an illustration of efficiency we quote the record of the Philadelphia school clinics, the Journal of the A. M. A. declares:

City Dentists Work for School Children. The work of the city dentists at the City Hall Dispensary and at the branch in the Southwark School at Ninth and Mifflin Streets, has been of such high quality and of such volume that more branches are planned. Dr. Piercy B. McCullough, chief of the dental division of child hygiene, with eight assistants, during the five months from January to the last of May of the present year, at the two dispensaries performed a total of 15,323 operations. School children are sent to the dispensary by the school medical inspectors, and these mean 90 per cent. of the whole 175,000 school children in the city.

Legal Status. The supreme need of school dentistry now is its establishment upon a legal footing, and all our energies should be concentrated upon the accomplishment of this purpose throughout all the governments in civilized parts of the globe. The most substantial testimony as to the utility of free dental clinics is the fact that in several countries they have withstood executive, legislative, and judicial tests. For instance, the State of New Jersey places school dentistry on a legal status; it has passed a law authorizing the establishment of free dental clinics for children under sixteen years of age, whose parents are indigent. It provides that all cities of the first class within its borders shall each be authorized to appropriate \$10,000 per annum for expenses of such clinics. (The finance committee of each municipality may be applied to for permission to establish these clinics and for the necessary appropriations.) In this respect New Jersey enjoys the unique distinction of possessing the first and best law establishing school dentistry upon a legal footing. If other states and countries will pass similar enactments, they will confer great benefit upon our school children, and provide the movement with the most substantial basis upon which to rest. Five cities in New Jersey now possess one or more school clinics doing effective work.

In referring to the executive recognition of the movement made to promote school hygiene, we would not overlook the official acknowledgment which their (gracious) majesties Gustav of Sweden, Christian of Denmark, and other sovereigns, have been pleased to make; neither would we omit mention of the enactments passed or the appropriations granted by the parliaments, chambers, congresses, and assemblies, as well as the municipalities of such countries as England, Germany, France, Italy, Sweden, Australia, Canada, Nova Scotia, and the United States. We would also call attention to the attitude of the judiciary as having so far upheld these legislative enactments as being constitutional.

Archimedes declared: "Give me a fulcrum on which to rest, and with my lever I will move the earth." The statesman might say, "Give me the 500,000,000 people of teachable age in the world, and I will unshackle slaves, avert war, enlighten the uncivilized races of the earth, and rule nations righteously." The educator might well declare, "Give me the school children, and I will undertake to banish ignorance, ensure plenty, solve educational problems, attain the highest degree of efficiency, and win the eternal gratitude of future generations." The hygienist could declare, "Give me the school children, and I will throttle epidemics, stay pestilence, establish sanitation, annihilate quackery, and elevate school hygiene to the loftiest pinnacle of public favor." The dentist might declare, "Give me the school children, and I will lay a foundation for physical perfection, prolong the reign of beauty, add charm to the accents of eloquence, check oral infection, increase personal efficiency, augment the years of usefulness, and banish the fear of a toothless age."

The Status of School Dentistry in This Country. School dentistry is on trial. It is being tested. The keynote of this paper is *efficiency*—national, educational, vocational, sanitary.

Hygiene demands the establishment of school clinics upon a *sound basis*.

Conversely: The *present status* of school dentistry is gauged by *influences external* to the dental profession and depend upon the efficiency of the school dentist himself; of the system pursued in the conduct of school clinics; of the popular support extended to the school dentist; of the legal backing secured from legislatures and Congress; of the financial aid secured; of the educational campaign conducted in behalf of school dentistry.

Résumé. In conclusion, we would submit the following points as a basis upon which free dental clinics may be established according to the present status of school dentistry. Whereas, statistics prove

that from 75% to 98% of the pupils under sixteen years of age in our schools have diseased teeth:

1. The coöperation of the federal, state and municipal authorities, the aid of educators, physicians, and all professional men, as well as parents and the commonwealth, should be invoked to assist dentists in combating the ravages of that disease most frequently attacking our juvenile population, namely, tooth disease.

2. The public should be made aware of the urgent need for the installation of dental clinics for the benefit of school children by all the educational methods known, in order that the way may be paved for the treatment of tooth diseases, and the establishment of oral cleanliness.

3. General knowledge of the cause of tooth disease, including the means of preserving the teeth by systematic treatment and clinical operations ought to be universally proclaimed, and form a part of the teaching of hygiene in every school.

4. Provision should be made for the gratuitous treatment of the teeth of children of indigent parents.

5. School dentists should be appointed by the proper authorities to inspect, treat, fill, and regulate school children's teeth; extractions should be supplanted by systematic treatment, and dental examinations should be followed up filling carious teeth and correcting irregularities.

6. Upon entrance into a school, the pupil's teeth should be examined, and a report of their condition made to the teacher, parents, or guardians, and appointments made with the school dentist to give any needed attention. Thereafter the teeth should be regularly inspected, at least twice a year, and the mouth kept in the best condition possible. The teacher parent, or guardian would be expected to coöperate with the dentist to the extent of seeing that the pupil kept appointments and obeyed instructions.

7. A record of the condition of the teeth upon entering a school, the name, address, age, sex, color, and temperament of the pupil, including treatments made, fillings inserted, extractions performed, and irregularities corrected, with date of each, should be entered in a file or card index prepared for such purpose.

8. The work in school clinics should be performed by paid operators, and the salary fixed by previous agreement with the proper authorities, and regulated according to the number of hours actually spent in the service of school children.

9. National and state laws should be passed authorizing, *First*, dental inspection in public schools, and *Second*, appropriations out of the public funds for installing, equipping, and conducting free dental clinics for children under sixteen, whose parents are too poor to pay for dental work.

10. All nations and all classes of society should be urged to unite in a systematic world-wide movement for the purpose of propagating the dental clinic for schools, as a fundamental and integral part of school hygiene.

CONTROL OF DENTAL CARIES IN SCHOOL CHILDREN

BY

PIERCY B. McCULLOUGH

From the beginning of the oral hygiene propaganda as well as at the present time the undefined though expressed policy reflects an attempt to instill into the popular mind the belief that the care of the teeth—such as may be practiced at home—will prevent dental caries.

The futility of this teaching becomes apparent after consideration of the forces instrumental in producing decay.

Sociologically the class most in need of state paternity is that in whose homes common sanitary requirements are ignored, where the body bath is practiced by seasons, if at all, and the food supply of a quality to be deplored. It is not to be expected that the children of such shall by outside influence acquire the dental toilet habits of the cultured.

Physiologically the teeth do not differ from other organs in their being a product of the nutritional supply, when this is inadequate the teeth show the effect and their resultant incomplete development is not remedied by the tooth brush.

The pathological secret of the active cause of caries Miller has proven to be the result of the acid secretion of micro-organisms, in the main, lactic acid fermentation. More recent investigations tend to show that caries is prevalent when the character of the salivary secretion is favorable for the growth of the acid producing bacteria.

By this brief review it follows by deduction that the theory of a perfect nutritional balance is fundamentally the secret of prevention; thus inadequate nutriment during the developmental period resulting in incomplete enamel formation and after eruption of the teeth the saliva influenced by the character of the diet becoming media favorable for the development of the decalcifying agents.

In support of the theory of the influence of mastication as a prophylactic measure, because of the beneficial influence of exercise on development, many skulls of primitive races have been examined to find the teeth free from decay and showing signs of excessive use. This evidence also convinces that these teeth were completely developed for without this latter condition complete functioning would have been impossible.

It is properly a modern complaint that we do not chew enough, nor is it strange that our children do not use their teeth when it is seen that because of imperfections in development, they are from the moment of

eruption unable to resist the influences producing decay and in this condition not fit for use, hence not used.

It is conforming a modern remedy to a modern disease that the school dental clinic is offered as a definite measure for control midway between adequate nutrition as a municipal problem and oral hygiene as the latter is now preached.

Clinical evidence shows that certain permanent teeth are decayed at one, two and three years after eruption, or at seven, eight and nine years of age, because these particular teeth are incompletely developed at the time of eruption. In them are minute crevices providing lodgement for the acid-producing bacteria. The first requisite therefore is that these natural imperfections shall be artificially repaired, and for this condition the only known remedy is the filling.

The first permanent molars are four, two lower and two upper, erupting back of the last temporary molar, the latter being the fifth tooth from the median line on each side of each jaw.

The development of these "sixth year" molars begins at the eighth month of pre-natal life, calcification of the enamel is complete at about the fifth year, they erupt, as stated at six years, while the roots attain their full growth in the tenth year.

It will now be seen that the development of these teeth is influenced not only by maternal environment before birth but that their subsequent development occurs during that period of infancy and early childhood when mortality is greatest.

The character of food supplied to both infants and children in districts sociologically bad in our cities, is of common knowledge such that it is to be expected that development under these conditions must be extremely poor.

It is not surprising therefore that after tabulating examinations, made in our dispensary on charted cards, of 9,953 children of elementary school age, we find 23,325 first permanent molars lost or decayed, or that of these four teeth nearly three to a child are decayed.

Tabulation of these particular teeth was made because in the saving of these teeth is concretely the secret of control of dental caries in all the children coming under treatment.

That the school dental clinic is not more generally a division of our health boards, I believe is due to the attitude of our profession respecting this subject, that our efforts have not been directed to the single purpose of the clinic as the remedy, appears to be due to the belief that the prevalence of dental decay is so immense as to be beyond remedy by this means; nevertheless as a study of the actual conditions progresses the remedy becomes the more promising.

Man is most susceptible to dental caries during that period in life

compassed by the elementary school age. It is therefore that during this time dental service is of greatest value.

The first permanent molars require this service two to one of all the other permanent teeth combined. Simple cavities in these teeth can be filled in from fifteen minutes to one hour, cavities involving the pulp in these teeth require about five hours to a tooth divided into visits covering several days. So that control of decay in a given number of children is accomplished when the decayed first permanent molars are seen before the pulps become involved. It means that ten teeth can be filled where the pulp has not become involved to one where it has.

Now then, in order that we may the sooner obtain control, we admit at the outset that to save the first permanent molars with dead pulps (nerves) means to delay reaching many other of these teeth before pulp exposure, so that we have ruled to extract these pulpless teeth at an age not to interfere with the development of the jaws, and certain other exceptions having to do with refinement of detail; with the result that we are now filling ten teeth in the time it would take to fill one pulpless one, by this method we intercept the time that makes the pulpless teeth.

One detail of our system provides that at the first visit of a child at our dispensary a diagrammatic examination is made on a charted card of the condition of all teeth, on these forms provision is also made for recording abscesses, enlarged tonsils, adenoids and enlarged lymphatic glands and for remarks having to do with a comprehensive oral examination. This examination is made but once. On a second chart record diagrammatic and written is made of the operations performed, with dates, this constituting also a record of the number of visits each child makes.

We assume at the outset to be responsible for the control of dental caries in every child seen with the single proviso that the patient makes the number of visits required in order that a discharge may signify that all the work indicated by the first examination has been completed. Patients are discharged for from six months to one year.

The following is a record of the number of patients treated and the operations performed at our City Hall office and one of the three school branches:

CITY HALL			
PATIENTS		1913	OPERATIONS
January.....	757	January.....	2,328
February.....	665	February.....	2,095
March.....	674	March.....	2,185
April.....	945	April.....	2,794
May.....	828	May.....	2,534
June.....	590	June.....	1,780
Total.....	4,459	Total.....	13,716

SOUTHWARK SCHOOL BRANCH

PATIENTS		1913	OPERATIONS	
January.....	386		January.....	695
February.....	252		February.....	585
March.....	225		March.....	551
April.....	363		April.....	772
May.....	344		May.....	685
June.....	209		June.....	381
Total.....	1,779		Total.....	3,669

Sixteen thousand five hundred and thirty-four patients have been treated from the opening of our City Hall office, October 5th, 1910, to June 30th, 1913, and 4,131 patients at the Southwark School from January 22d, 1912 to June 30th, 1913.

But figures that record jobs signify little unless each of these operations has been skillfully done.

Dental diagnosis requires a fine discriminating sense. To determine the extent of impaired pulp function in a decayed tooth, to devise and skillfully perform an operation curatively and mechanically complete is an example of exceptional co-ordination of mind and fingers.

The work before us requires dentists possessed of manual dexterity able to perform mechanical operations conforming to a system, the latter so complete that its application can be enforced. To this end we have classified every operation we are called upon to perform, all remedial measures not specifically provided for are referred for consultation. Operators are instructed by demonstration. After this control begins with controlling the patient.

I have stated on one of the display cards in our exhibit at this Congress that twenty dentists can obtain control of dental caries in 100,000 school children in five years, this statement is based upon the number of patients treated and the number of operations actually performed in one year in our dispensaries. It is misleading in this respect, namely, that the number of discharges does not equal the number of new patients recorded, it does however indicate capacity to do, it also makes patent this fact, that to claim control that can be attested means that in each year the discharges must approximately equal the number of examinations made, that the policy must provide for the enforced attendance of the child until discharged.

In our exhibit is also displayed an appointment card on the reverse side of which appears directions for brushing the teeth, we insist upon it as a sanitary measure, as we would the bath, but do not believe it will prevent dental caries as it is generally believed to do. Next to adequate

nutrition mastication is the greatest developmental agent. Mastication is also the greatest cleansing agent and only sound teeth will be used. Furthermore as instanced by the recent notable work of Pickerill, the character of saliva secreted under the influence of physiologic mastication exercises an inhibitory influence on the disintegrating elements unequaled by any artificial prophylactic measures. Children's teeth need only to be properly filled and made regular and even green stain will disappear with this treatment and proper diet. I have known irregular teeth to become straight without orthodontic treatment after the function of mastication has been restored. The necessity for the use of the tooth brush increases in direct ratio with age.

DENTAL INSPECTION IN THE PUBLIC SCHOOLS OF PROVIDENCE

BY

JAMES C. COLTON

Dental inspection of school children as established in Providence, R. I., will be of interest to all communities not within reach of dental colleges or provided with free clinics. Where colleges or clinics are established the question of corrective or preventative treatment for the children of the poor following inspection in the schools is not a very difficult problem, but where no means of treatment is at hand experience has shown that many children are unable to obtain even temporary relief from suffering due to dental disease. It was with the hope of bettering the dental condition of all classes of school children that Providence adopted its present method of dental inspection. No clinics were at hand, and the hospitals offered only extraction as a means of relief for dental suffering.

In January, 1911, Dr. Charles V. Chapin, Superintendent of Health, appointed the first dental inspector for the public and parochial schools of Providence, the duty of said inspector being to examine the teeth of school children and notify parents of all diseased conditions found. It is unnecessary to emphasize the prevalence of dental disease among school children. Reports on physical examination of children throughout the country pronounce defective teeth the most common malady. It would be unwise in addressing educators and health officials to attempt any description of the part which the teeth play in physical economy, or to dwell upon the effect which diseased teeth have upon the progress of the child. These facts will assuredly be taken for granted.

It remains, therefore, my privilege only to outline the method used and the success attending our effort to better the dental condition of the school children of Providence by timely suggestion and preventive education pursued through the medium of dental inspection. The method of inspection is as follows: Children of the first and second grades are called to the school office, or teachers' retiring room, as the case may be, in groups of five; each child brings a paper upon which is written name, age and grade. This information is taken by an assistant and recorded upon the official examination slips, after which each child is examined by means of steel-handled mirrors and probes if necessary. All dental defects are recorded, and the treatment deemed advisable by the inspector is indicated. As explained on the notice, teeth to be

extracted are marked with a cross (x), those to be filled are marked with a dot (.). Where aching teeth are present, the following notice is stamped in red ink: "This child's teeth ache, he should be taken to a dentist at once." Where abscesses or other septic conditions are found, special notice is given. Each notice contains charts of the deciduous and permanent teeth so that the offending one is clearly indicated to the parent who is advised by a plainly worded notice to take the child to a dentist.

A sufficiently large number of mirrors is at hand to assure a separate one for each child; these mirrors are thoroughly boiled after use, and are kept wrapped in clean towels, thereby protecting the children, so far as possible, from contamination.

By means of carbon papers three copies of each examination are made, one of which is sent to the parent, one recorded for the health department, and the third is left with the teachers for future reference by an assistant on her visits for results. Upon the third copy is recorded all dental treatment administered during the school year following the examination.

The need of dental inspection was forcibly expressed by a dental examination of primary, grammar, and high school pupils of Providence, which revealed the fact that over 96 per cent. of the children of our city had defective teeth, and that 46 per cent. were suffering from aching teeth which were receiving no attention. So apparent was the need for action that when dental inspection was decided upon as a practical weapon, there arose the most difficult question of where to look for a point of attack. As stated, no means for corrective treatment were at hand, and only 4 per cent. of the children examined had ever received dental treatment. Dr. Chapin decided that as preservation of deciduous or temporary teeth was impossible under existing conditions, efforts would best be applied to preservation of the permanent teeth, and preventative education, to best accomplish which it was decided to direct all efforts to those grades wherein would be met children of an age whose first permanent molar teeth had not had time to become diseased, or at any rate, not sufficiently so to necessitate extraction. These first permanent molars erupt generally when a child is between five and one-half and seven years of age, and to these children all effort thus far has been given. The wisdom of this choice is constantly manifesting itself, for surprisingly few parents formerly knew that the molar tooth, which takes its position directly posterior to the temporary teeth, is of the permanent set. To this very pardonable lack of knowledge on the part of parents is due, I believe, to a very great extent much of the dental suffering of children, and had dental inspection accomplished no other result, it is a success, for through it parents and children are being educated to the value of the first permanent, or commonly called six-

year molar. But other results are being accomplished, as is shown by the returns presented by an assistant, to whose efficient service much of the success of the work must be credited. Under salary as a substitute teacher in the employ of our school department, this assistant spends regular school hours throughout the year in following up the children examined. This work is most important, for thereby parents are not permitted to forget, after attention has once been called to the dental defects of their children. Reports show that last year 3,594 children were examined, of whom 3,242 (90%) had defective teeth. Returns at hand for 2,633 of these children show that 673 (25%) have been taken to the dentist for treatment, with the result that 2,571 dental operations have been performed:

237 permanent teeth were filled.
 225 temporary teeth were filled
 43 permanent teeth were extracted.
 2,066 temporary teeth were extracted.

A total of 2,571 dental operations.

It must not be lost sight of that these children are all in the first and second grades, and are of an age where temporary teeth are loosening. In many cases where loose teeth are present the children are instructed to have them out at home. Records show that 698 children followed such instructions, and as no credit is taken for home extractions unless recommended and so indicated on the notification to parents, we must in fairness include these children as among those who have been benefited by the work of dental inspection. But regardless of where the *credit* belongs, the fact is undeniable that over fifty per cent. of the children in need of treatment have at least been given some relief.

Not alone have these children benefited because of dental treatment; they have also been taught the value of clean, well-cared-for teeth, and were statistics taken to-day in the schools where inspection applies, no such condition of neglect as shown by a former examination would be present. And parents who formerly permitted the permanent molars to decay, believing that they would later be replaced, are now exercising every effort for their preservation.

In order that the children of the poor might receive treatment, the members of the Rhode Island Dental Society practicing in Providence established a board of "clinical dentists." Membership on this board was entirely voluntary, the men agreeing to work for children (officially recommended as being in need of assistance) at a very nominal fee, such work being done in the private offices of the members of the board. To the generosity of these men much credit is due for the success of the work, as only through them can many children hope for relief. Illus-

trated talks on dental disease and mouth hygiene are given frequently to parents meeting in the primary schools, as well as to the grammar children who are not included in the grades examined. By means of such talks parents and children are aroused to a higher appreciation of dental care. Personal appearance is a big factor in the fight for success, and there is no greater embarrassment to personal appearance than diseased and unclean teeth; that clean, sound teeth are a business asset I am sure none will deny. Dental inspection in Providence attempts prevention as well as correction of dental disease by appealing to children at a time of life when they are most apt to regard tooth-brushing as a waste of time better applied in cultivating their youthful fancies.

MEDICAL INSPECTION OF SCHOOLS IN TORONTO

BY

W. E. STRUTHERS

Medical inspection of schools was begun in Toronto by the Board of Education in a tentative way, early in 1910. Miss Lina L. Rogers was appointed Superintendent of Nurses, and began work April 24th, investigating the down town schools, seeking out the dispensaries, settlement workers, and hospitals where attention could be secured for the children of the poor. At this time there were seventy schools, four homes, two industrial schools, with a school attendance of 45,000 children under the Board's jurisdiction. On September 15th, two medical inspectors, and on November 3rd, two more nurses were appointed. The two medical inspectors and two nurses could only care for about twenty schools with an attendance of about 4,000 children, giving an every-other-day inspection. The work of the medical inspectors and nurses disclosed such serious conditions of health that arrangements were undertaken by the Board to organize a system at the beginning of 1911 that would cover the whole city. On February 2nd a Chief Medical Inspector was appointed, and on March 2nd eight assistant medical inspectors, one dental inspector, and thirteen nurses were added to the staff. The city was divided into sixteen districts, each having two groups of schools, the medical inspector visiting one of his groups every other day, and the nurse making daily visits. On February 15th, 1912, six additional nurses, and on March 21st, ten additional medical inspectors were added to the staff; on March 6th, 1913, three more medical inspectors, and twelve nurses were appointed to complete the medical and nursing staff, so that now there is an every day service by both medical inspector and nurse. This year dental rooms were equipped in four schools, and four dental chairs installed. On April 3rd, 1913, two dental surgeons were appointed, and two more are about to be added, so that four dental chairs will be in operation from 9 to 12 a. m., including Saturday. I am convinced a much more efficient service can be obtained by having the dental chairs in the schools.

Let me point out here that all phases of the work are under the direct and absolute control of the Board of Education. The organization is simple and direct. Through the teacher, nurse, and medical inspector we never lose touch with the child until it leaves school. During that time we have taught that child the laws of health, trained it in practical hygiene, and right habits of life so that it leaves school

with a sane, practical knowledge of how to care for its body, and of the importance to itself, as to others, of the control of disease and a clean life. We hold the teacher, the nurse, and the medical inspector equally responsible so far as that responsibility can fall upon them for the child's condition and its development.

There is to-day an altogether too narrow and contracted view of the medical inspection of school children. There is the medical Health Officer's idea, which is largely control of contagious disease; there is the educator's idea, which is largely concern over certain physical defects. We must broaden our conception of the health supervision of school children to include all things that affect the child's physical, mental, and moral development. The coming generations are in our hands, and the responsibility lies upon us to give children a sane, practical knowledge of the vital things that pertain to their lives, and so seriously affect their development, which are so lightly considered now. Our great responsibility is to keep well children well; then we shall soon be able to care for the diseased or the physically defective. Every problem of child life, light, drink, food, clothing, rest, amusement, work, cleanliness, etc., has a marked effect on its health, and has a vital relation to its school progress, and later to its efficiency and earning capacity. So the teacher, the nurse, the doctor, and the parents have one goal—the best interests of the child, which means the production of the best type of citizen.

Teaching of Hygiene. Parents are either ignorant, heedless or willfully neglectful of the simplest fundamental laws of the hygiene of food, drink, clothing, ventilation, and cleanliness. For one child that dies for want of food and clothing there are a thousand die from improper feeding and over feeding, improper clothing and over clothing, and coddling. We have endeavored to make the teaching of these simple truths of the hygiene of child life the important basis of all our work believing we will accomplish more for the coming generations by inculcating the laws of health and the simple but important truths of the hygiene of the body, than in any other way.

Tonsils and Adenoids. It is astonishing how frequently one finds a dirty tongue and foul breath in a child that should be as clean and sweet as a rose. It only indicates the prevalence of an improper diet with the presence of carious teeth, diseased tonsils, and adenoids. We have had many striking examples of the results of attention to the teeth, removal of diseased tonsils, and adenoids. There was a rapid improvement of general nutrition, a quickened intelligence and a readier application to school work with a marked improvement of school progress. During the year nearly 200 children have had adenoids removed, 400

diseased tonsils removed, and 900 have had both adenoids and tonsils removed. The change from dull, slow, colorless, stupid-looking boys with discharging noses, sleepy eyes, round shoulders, contracted chests, and puny bodies to clean, alert, erect, active, bright-eyed and intelligent looking boys is a striking picture not soon to be forgotten by those who have had the pleasure of observing it. The statement of this fact does not cause the quickening of the pulse of a single reader, but the realization in the living flesh of even one of such cases makes pessimists into optimists in the twinkling of an eye.

Decayed Teeth. A foul, unclean, unhealthy mouth and throat is always found where teeth are decayed and uncared for, and an unclean mouth is a great breeding place for disease germs. School dental clinics are the solution of the question of the care of children's teeth, and it will not be long ere it is generally recognized that a school is incomplete without a dental chair. And the policy should be to do dental work for all children who require it up to at least 12 years of age. The second set of teeth are then about completely erupted. Through this department the school children of this city were supplied with 10,000 tooth brushes, sold at 10 cents and 5 cents each, and 13,000 tubes of tooth paste sold at 10 cents a tube. This attention to the cleanliness of the teeth alone must be of great benefit to the children. Some principals have their teachers ask their pupils each morning how many brushed their teeth before coming to school. In one school the reports from the classes varied from 50% to 94%. During the year also 3,050 children have had their teeth filled, 746 children have had badly decayed teeth or roots extracted, and 292 have had teeth filled and others extracted.

Defective Vision. Many children have had their eyes tested. Quite a number of children were found with defective vision, whose parents never dreamed of such a defect being present. As a result of this faithful work 670 children were fitted with glasses and 40 had to be refitted. The Board supplied free of cost 61 children with glasses. This furnishes some indication of the small number, less than 10%, unable to purchase glasses for their children and of the care of the nurses in the selection of the cases in which they recommend free glasses. Free glasses are recommended only after careful investigation of financial circumstances by the nurse.

General Cleanliness. This is always a Herculean task to obtain. But teachers, nurses, and doctors have daily admonished, persuaded, and rebuked, and the constant iteration has produced its effect; but this is a big daily task that possibly must remain so for some time—at least until housing conditions and facilities for cleansing purposes are con-

siderably improved. But constant effort to have the children come to school with clean teeth, clean mouths, clean noses, clean heads, clean boots, clean clothes, clean bodies, is driving home the great lesson of cleanliness of the person and of the home. Much better results could be obtained were there better facilities in the home or in the school to obtain cleanliness. It is difficult to get body or clothes clean without hot water and soap.

Shower Baths. The establishment of shower baths in the schools, and especially in the downtown schools, is an urgent necessary undertaking. It is a progressive, necessary, and economic step.

It appeals to me that this can be done at an inconsiderable expense compared with the great benefits that will accrue to the children under your care. It is perhaps wholly unnecessary for me to point out to you that many children in these schools have meager if any facilities at home for keeping their bodies clean. Nor need I tell you how much a child's self-respect is increased, its moral tone uplifted, its health and general welfare improved by being kept clean and sweet and wholesome.

The Forest School. Nothing in the modern development of the public school has given more satisfaction than the Forest School. From everywhere comes the report of the remarkable stimulus received by the child in its outdoor life and the great improvement in its physical development. Such schools have proved to be an economy, not an expense. Children accomplish in half the school lesson hours as much as their stronger fellows in the regular school. The other half of the lesson periods are given to nature study, play, gymnastic exercises, and drill. Children are given three wholesome meals a day, plenty of milk, and two hours absolute rest and sleep every day. Such regularity of life in work, play, meals, and rest produces remarkable results in a very short time. The Forest School opened on June 20th, 1912, and closed September 20th. In all about seventy children were in attendance, the average attendance, however, fell somewhat below fifty. In this tentative effort to demonstrate the value of such open air school work, we had, of course, some difficulties and a number of handicaps. The children had to learn that although the school was in the woods, that although the method of teaching and studying was different, it was still necessary to maintain discipline. Some of them did not seem to know what obedience meant. Many were under the impression that this was not a regular school in any sense, that even in attendance they could come and go as they pleased. In many ways, too, our facilities were limited, and, of course, our difficulties to provide and care for the children increased.

During fair weather the children spent ten hours in the open. They

usually arrived at the grounds about 8.30 a. m. and left for home about 6.30 p. m. After a breakfast of cereal, milk, bread and butter, the nurse took charge of one class. They were divided into junior and senior classes. At 10.30 they were served with a glass of milk and bread and butter. At 12 o'clock there was a general wash-up. Dinner consisted of soup, potatoes and meat, bread and butter, milk, and some kind of pudding. Supper consisted of bread and butter, milk, jam, light cake or oatmeal cake, or bread and milk, etc. After each meal each child took its own cup with some water and under the watchful eye of the nurse thoroughly cleansed its mouth and teeth. At 1 o'clock came the rest period; all were required to go to sleep for two hours. The cots provided for this purpose allowed complete relaxation of the body so that the children's sleep was sound and refreshing. These cots had woven wire springs and the ends so arranged that they would readily swing under the bed. They were thus easily handled. The rest of the equipment was a double military blanket and small pillow. For wet weather a rain-proof covering at the foot of the cot was so arranged that it could be rapidly placed over bed and blanket.

During the first week the Forest School was open, all but three children gained in weight. That weight varied from one-half to four and one-half pounds. Naturally that gain did not continue at the same rate in the weeks to follow. But to judge the benefit accruing to these children from the point of view of the gain in weight only would not be fair. The gain in weight is important for it should indicate increased vitality and strength. But this is not the only result. Children came to the school dull, stupid, unresponsive, with but little evidence of developing mentally. It was a great pleasure to watch the awakening and quickening intelligence, to see apathy and dullness and stupidity replaced by intelligent alertness and activity, to note the bright eye, and quickened movements to see the natural interest in everything that surrounds a child evidencing a developing mind. But even this quickened mentality is not the only result, for the child has learned something in deportment, to lift his hat to a lady, to smile back "Thank you" for a service rendered, to eat and drink decently at the table, to appreciate the beauty of a few wild flowers, the lure of the open woods, the majesty of the rolling sea, to recognize his Creator in the things of Nature. There has been an uplift to his whole moral being, the effect of which, I believe, will never entirely pass away.

Feeble-minded Children. During the year many efforts have been made to secure municipal and provincial care of these children in Institutional Training Schools, and it is regrettable that not much has resulted from these efforts. Many people still have confused or

hazy ideas on this subject. Writers on the mental states of children vary somewhat in classification but the following is probably the simplest:

1. The supernormal or unusually bright; these sometimes need as much care and supervision as the feeble-minded.

2. The normal child.

3. The subnormal children and best educable but also permanently slow or sluggish in mental or physical action. These are responsible.

4. The abnormal and irresponsible.

- a. Morons or the feeble-minded; capable of earning a living under favorable circumstances, but incapable of competing on equal terms with their normal fellows or of managing themselves or their affairs with ordinary prudence. Educable to some extent and can be trained in manual work, sometimes becoming fairly proficient but never responsible. The high grade moron may reach the mental development of a child of 12 years or thereabouts, but does not pass this stage of intelligence.

- b. Imbeciles—can feed themselves, guard themselves from physical danger but incapable of earning their own living.

- c. Idiots—unable to attend to their physical wants and unable to guard themselves from physical danger—not sufficient mentality to recognize danger.

All abnormal children, therefore, should be segregated at an early age, and under continuous supervision for the protection of the State, the good of the race, and for their own happiness. It is no evidence of kindness for parents to keep these children in their own homes and send them to Public Schools nor any evidence of sound sense or political economy for the Government to permit it. These children are happier with their kind. They are a great handicap to other children in the Public School. They become the butt of ridicule of their normal fellows, which is bad for all. These children should be in Government Training Schools, educated as far as that is possible, trained in trades or agriculture; they should go from the training school to homes for feeble-minded men or homes for feeble-minded women, and there remain until they cross the Great Divide. The money spent by the Government in this great and long-neglected work would be in the interest of time, economy, and the highest evidence of the State's recognition of its humanitarian responsibilities.

Backward Children. There are still many strenuous advocates who maintain that the pabulum supplied in the public schools should consist of a knowledge of reading, writing and arithmetic. Many to-day would add to this diet a knowledge of spelling, grammar, composition, history and geography. Quite a number would add to this by way of dessert a little knowledge of art, music, domestic science, and manual trades. Heretofore this diet has been served up to the child, irrespective

of its physical condition. Many a child got dyspeptic and dropped out. To-day it is more deeply realized every day that the whole function of the public school primary and secondary is to fit the child physically, mentally, and morally for its place in the State, to develop its body as well as its mind so that it may become an efficient member of the community. For many years the child's body has been neglected and its mind coddled and spoonfed. Educationists failed to realize the tremendous importance of the physical condition upon mental development and mental training. In the higher grades we find fewer children with physical defects. The mental tests have been a thorough physical test. Those with physical defects have been hampered or stopped in their school progress; they have never reached the higher grades. It has been said that in our public schools "children are taught to fly before they learn to walk, to use their imaginations before they control their bodies." But parents, educationists, and governments serve up the same school pabulum to the nervous, half blind, diseased, semi-deaf, anaemic, ill-nourished, rachitic, ptomaine-poisoned child as to a normal child. What a burlesque on common sense and what refined cruelty! The embittered, wasted, criminal lives of many children cry out against this haphazard, irresponsible, God-help-us method of dealing with child life. Where parents fail the State should fit the child to receive an education. Therefore the State should be the over-parent, and see that parents properly feed, clothe, and care for their children. It is the highest and truest economy for the State to see that every child gets its fair chance in life. A true knowledge of child care should be more general. Personal and general hygiene should have a far more prominent place in the school curriculum. Clean and right life habits will mean more for a child in life than a smattering of art and music. Many children are backward, vicious, immoral, criminal, simply because of remediable physical defects, the result of neglect, improper feeding, and poor housing. The child never had a decent chance to develop physically or mentally. Special classes for these children with removal of physical defects—and the Board should insist that every child admitted must have their physical defects removed—with special instruction and careful health supervision will rescue them from criminal life and develop them into useful citizens. These classes also act as a drag net for feeble-minded children. If the measure of their intelligence does not fall below the normal, more than three years, they are likely to develop into normal children.

During the year about 540 children were referred to the medical inspectors for examination. Of these about 400 were declared merely backward, 120 feeble-minded, and 21 imbecile. I would judge that 120 is a low estimate for the feeble-minded, and that a further and more

careful examination would likely show that number increased. If a provincial or municipal training school is not soon provided for these children then they should be placed in a special school for they are a handicap to normal children in other schools. Classes for backward children have been established in three schools.

Sex Hygiene. A great deal has been written on this subject—it has been discussed from all possible viewpoints. The conviction is becoming more general that boys and girls should be given a true and accurate knowledge of these things which are so vital to them in their future lives. It is recognized that young minds seek this information and the great tragedy is that they receive it from uninformed and often impure minded persons. It is true that the father or mother is the ideal one to reveal to a boy or girl its sex nature, but we know the subject is almost universally avoided by parents.

Many parents wrap themselves in the fond delusion that their boy or girl knows nothing of the subject and that their child is as innocent of such knowledge as a babe. We know that this is practically never true. Boys and girls, too frequently, before they are in their teens get a false, distorted, or vicious explanation of sex matters that results disastrously in later years. Even in these young days they think lightly of sexual relations, and their moral reserve is permanently shattered. They do not understand themselves; they do not understand the change from boyhood or girlhood to manhood or womanhood and no one will speak to them of these things except the vicious or the uninformed. What then is to be done for the child at this age—the beginning of adolescence. The subject should never be broached before mixed classes of children, and but little of the essential truths can be taught in separate classes. The teaching of the essential truths of sex hygiene must be individual, impersonal, and scientific. That is to say the teaching should be done by a physician to the individual child and the information should be conveyed impersonally. Naturally this work should be done by the Department of Medical Supervision of Schools, or under the guidance of the medical staff. We recognize that it needs picked men and women to begin this work so as not to produce harmful instead of good results. Once begun and established I think such teaching would be taken in a matter-of-fact way just as other parts of the school curriculum. Women physicians must instruct the girls and men physicians the boys. This teaching could be done at the time the last complete physical examination is made of a child, before it leaves the public school, namely, while it is in the junior 4th class or grade 7.

Communicable Diseases. The Board of Health aims to make the best use of its facilities to get control of communicable diseases, and our

aim is to keep communicable diseases out of the schools, so that we all work cordially for the same end. The Board of Health sends a list every morning to our department of the contagious diseases that have been reported to them, giving us the age of the child, the address, and the school district. The principal and medical inspector of the school concerned are immediately notified from this office. Even if the patient is not a school pupil, the notification is forwarded that the principal, medical inspector, and nurse may have an adequate idea of the prevalence of contagious disease in their school district. Any unusual prevalence in one district calls for an extra effort from the medical inspector and nurse to discover, if possible, the cause of the spread. All cases of contagious disease found in the schools by the medical inspectors are given an exclusion card, sent home, and the Board of Health at once notified.

The Board of Health at the request of the Board of Education abrogated the rule that called for the closing of a school classroom where two children had developed diphtheria. This request from the Board of Education was the result of closing two rooms in the Parkdale Public School last fall. In this school we had an epidemic of diphtheria in which 80 cases of clinical diphtheria and diphtheria carriers were isolated. Almost at the outset a classroom was ordered closed under the old rule. Before the order could be carried out I had the medical inspector take cultures. In the time at his disposal before dismissal he, with the assistance of the school nurse, took cultures of 27 children, and 10 out of the 27 proved positive and, of course, were quarantined. None of these cases showed the presence of exudate or membrane, and there were but slight clinical symptoms; only those children whose throats showed a slightly angry appearance were swabbed. But many later cultures taken from throats that showed no evidence of inflammation present likewise proved positive, and the Board of Health placarded these as diphtheria carriers. This outbreak began with a child who had been home sick "with a cold" for a short time without medical attendance. Notwithstanding the mild attack slight post-diphtheritic paralysis followed. The family physician being out of the city the child was taken to another practitioner, who mentioned the possibility of the illness being diphtheria, but did not take a culture. The nurse found this child in school, and sent it to the medical inspector, who took a culture, and also cultures from two other children at home; all three proved positive. An effort was made at once to get control of the sources of infection. I sent four medical inspectors and four nurses to the school and the Board of Health promptly and rapidly furnished us with culture tubes. Altogether 335 cultures were taken, of which 80 proved positive.

We have a by-law requiring all children absent from school for two days or more on account of illness or suspected illness to report to the medical inspector before being admitted to the classroom. We have endeavored to teach parents the danger of allowing children having contagious disease to play with well ones and also the fact that mothers may carry the disease to others, and to place before parents their grave responsibility not only to their own children but to those of their neighbors. A very slight attack of contagious disease in one house may mean later death of a child in a neighbor's house. It is a sorry reflection on human kindness that many such deaths occur through the criminal carelessness or absolute indifference of some parents. Through information obtained from school children and teachers this department was able to report many cases of concealed contagious disease to the Board of Health. During the year there were 84 children with diphtheria, 42 with scarlet fever, 113 with measles, 497 with chickenpox, 175 with whooping cough, 52 with mumps, 292 suspected contagious disease, and 728 exposed to contagious disease turned back from the schools, making a total of 863 children that had to be excluded for these contagious diseases, and a total of 728 children who were exposed. Besides these 366 children had to be excluded for other conditions. In one week we have found quite a number of diphtheria carriers, children who had no clinical symptoms of the disease but had the bacilli of diphtheria in their throats. I am convinced that the spread of the diphtheria and child mortality from this serious disease, would be very greatly decreased if the throat of every member of a household where diphtheria existed were carefully swabbed before quarantine was raised. To test how commonly children in our city were diphtheria carriers every one of the medical staff agreed to swab one class of children; these were to be of different ages. This would have meant the testing of 1,000 children. It is to be regretted, I think, that the Board of Health were unable to supply us with culture tubes for this purpose. One great difficulty we have had in endeavoring to control the spread of the minor contagious diseases in the schools is the fact that after we have excluded these children from school we find them playing with other children on the street after school hours. This breaking of quarantine we have reported to the Board of Health.

The School Nurse. The first regular employment of trained nurses in connection with work of medical inspection of schools was begun in New York City by Miss Lina L. Rogers, our present Superintendent of Nurses, in 1902. During September and October of that year Miss Rogers worked alone, and in November she was given charge of 12 nurses. The improved results in the schools supervised soon led to the appoint-

ment of nurses in all schools. Since that time experience has proved that medical inspection fails to produce results without the trained nurse, and the best developed systems have two trained nurses to one medical inspector. Nurses are essential to systematic follow-up work, and it is only by follow-up work that anything is accomplished for the child. The nurse becomes the instructor of the pupils and parents and teachers in the principles and practice of sane hygiene. She becomes the link connecting the home with the school. I think, without exception, the teacher always welcomes the school nurse, although they occasionally have rebuffs in the home. Nurses are especially helpful in reducing the number of exclusions for minor contagious skin diseases and infected heads. Those that are excluded she follows to their homes at once, and sees that treatment is begun. She has been a great help to the teachers in guarding the school from such epidemic diseases as diphtheria, scarlet fever, measles, chickenpox, mumps, and whooping cough. Many cases are first discovered by her visit to the home, and brought under proper supervision. Many mothers have expressed to me their deep appreciation of the assistance the nurse is to them in teaching their children habits of cleanliness, daily brushing of the teeth, and neatness in the care of their person. Many a mother, too, has reason to bless the school nurse as an angel of mercy who has sought out a stricken home, comforted and relieved the sick children and over-tired mother, advised, directed, and brought order out of untidiness, uncleanness, discouragement, and distress. The school nurse has interested herself in the home, brought food and fuel, boots and clothes, and made it possible for the children to get back to school. "The Lancet," one of the foremost medical journals in the city, says: "The public school nurse in Toronto is doing much good. The patients that come to the hospitals for treatment present a much cleaner appearance than formerly."

An analysis of the nurses and medical inspectors' reports for the year will show that there has been 10,430 school visits made by the medical inspectors and 12,560 made by the nurses, a total of 22,990 school visits; 668 home visits by the inspectors, and 21,519 home visits by the nurses, a total of 22,187 home visits. Our good results have been largely due to these home visits, or follow-up work. Occasionally a little friction has occurred with the parents, but the uniform tact, kindness and courtesy of the nurse has almost invariably won her way to the desired end, namely, the obtaining of remedial measures for the child. Besides these visits the nurses made 890 visits to dispensaries, eye and ear, nose and throat, dental, and other clinics. When the mother was the family wage earner the school nurse took the child to the clinic for the necessary treatment. There were special physical examinations made

of 12,078 children by the medical inspectors for disease, defect, or other conditions. 7,928 parents were notified of physical defects; total physical defects 19,177. There were complete physical examinations made of 9,221 children, of which 2,728 were normal leaving 6,493 physically defective; total defects 9,720. 2,413 parents were notified, 1,493 children were reported with defective vision, and 512 with eye disease; 710 were supplied with glasses or 47.5. 3,247 were reported with defective nasal breathing, and 1,105 had adenoids removed, or 34%. 5,836 were reported with carious teeth, and 4,088 had their teeth filled or extracted, or 30%. 1,229 were found with contagious disease, 1,435 with skin disease, 171 with ear disease, 6 with epilepsy, 32 with chorea, and 821 with other diseases. The nurses gave 15,894 treatments; this would include treatments of skin disease, discharging ears, sore eyes, or dressings. The nurse also gave 180,317 instructions in the care of the head, teeth, eyes, ears, or body.

It is to be remembered that up to April 1st, 1912, there were only 8 medical inspectors and 17 nurses. Victoria, Australia, reports a percentage of results of 25; Yorkshire, England, reports as high as 60%. It is difficult, or rather impossible to show by percentages the scope or extent of the work accomplished. Take a child reported with enlarged tonsils, enlarged glands, and carious teeth. It is more than probable, especially in the younger children, that the carious teeth are the whole source of infection, and that when the teeth are cared for the inflammatory condition will subside and the tonsils and glands return to their normal size. School activities must be adjusted to the needs of the child's health, growth, development, education, and practical efficiency.

THE ECONOMIC IMPORTANCE OF DISEASES OF THE EAR IN SCHOOL CHILDREN

BY

J. E. SHEPPARD

The cardinal symptoms of ear disease are deafness, tinnitus, pain, discharge, and, in smaller degree, vertigo, and according as they produce these symptoms do diseases of the ear assume an economic importance among school children. So relatively infrequent among children are tinnitus and vertigo that they may with propriety be withdrawn from consideration in a paper of this scope. This leaves then deafness, pain, and discharge, as the symptoms of which we must take note, of which the two latter assume importance largely because of their significance—they indicate the probable presence of diseases which may have as a result danger to life, and impairment of hearing.

Pain, or earache, may indicate amongst school children, dentition, defective teeth, acute inflammation of the external auditory canal (boil), or acute inflammation of the middle ear (drum cavity or mastoid) either catarrhal or suppurative, and frequently, particularly if recurring at longer or shorter intervals, becomes strongly indicative of adenoids alone, or with hypertrophied tonsils, and therefore a symptom the proper interpretation of which may mean much to the growing child. Moreover, a child with earache, with or without the frequently accompanying middle ear abscess and discharge, is unfitted for a longer or shorter time by each attack to attend school; hence pain in the ear takes its place as one of the factors in the problem of retardation of school children, concerning which Gulick and Ayres, in their recent book on "Medical Inspection of Schools," state that their studies lead them to the conclusion "that the greatest factor affecting the problem of the child's progress through the grades is that of regular and continuous attendance."

Discharge from the ear may arise in the external auditory canal, with an intact drum membrane, and virtually normal hearing, in which case it usually indicates improper hygiene of the ear—too much cleansing with soap and water followed by imperfect drying of the canal. A running ear, however, *usually* means middle ear suppuration, acute or chronic, with, always in these conditions, a perforation of the drum membrane, and more or less impairment of hearing. In a goodly proportion of these cases, moreover, we may expect to find a throat more or less obstructed by adenoids, which by their presence seriously interfere

with a cure. Chronic suppurative inflammation of the middle ear is a constant menace to the life of the person so affected on account of its proximity to the brain and its covering membranes, and it is shown by statistics to be present in 2% or more of all school children.

We come now to the symptom of by far the greatest economic importance, viz., defective hearing or *deafness*. Cornell makes the statement that "defective hearing is the physical defect constituting the greatest bar to progress in school." Hearing sufficiently impaired to be of consequence in school work is found to exist in from 2% or 3% in New York school children to 7% among those in Boston, and up to 12% in Edinburgh. Deafness among school children may for all practical purposes be attributed to adenoids, in so great a proportion of cases is this growth the underlying factor. Add to this the fact previously stated that adenoids are the frequent cause of earache, and a very usual factor in the chronicity of middle ear discharge, and I would seem to have sufficient reason for a brief discussion of this adenoid question. I would include in this the element of enlarged tonsils without on each occasion a specific mention thereof, since adenoids are present in almost all cases of hypertrophied tonsils, while in about one-third of all cases of adenoids are the tonsils diseased. A few statistics may be quoted from an article by Allport of Chicago, published in the Journal of the American Medical Association, last month. There are, he says, in this country about 20,000,000 school children, of which 75% are suffering from some partially or completely remediable defect which is more or less interfering with their physical, mental, and moral advancement; 1,000,000 have defective hearing; 6,000,000 have operable adenoids and tonsils. There are about 260,000 schools in this country, valued at \$850,000,000 and costing about \$500,000,000 a year to maintain. In New Jersey alone there are \$44,000,000 invested in public schools, costing \$13,000,000 a year to run. There are 500,000 pupils with a possible attendance of 71,000,000 days, and yet, owing to absences, only 9,000,000 of these days were utilized. Seventy-five per cent. of these absences was due to sickness, representing a loss to the state of about \$3,750,000. Undoubtedly, proper medical school inspection would have largely obliterated such an intellectual, moral, and financial loss to the State. In New York City, with a school population of 650,000, 30% of the children are two years behind their grades, and 90% of this is due to abnormal eyes, ears, noses and throats. Dr. Cronin found in one New York school 150 defectives, who were backward in their studies and incorrigible in their characters. One hundred and thirty-seven had bad tonsils and adenoids and 13 defective vision. After these conditions were removed, all of their characters and school standing rapidly improved. A child whose eyes prevent comfortable study, or whose deaf ears render

easy communication with those around him impossible, becomes retarded in school, discouraged and careless, truant and idle, and ultimately very likely leaves school, forms habits of idleness and vice, and not infrequently joins the criminal classes, and becomes an expense, and a charge to the State in reformatories and prisons. To permit such children to follow such a programme is neither economical, philanthropic, or wise.

Children who do not keep up with their grades are called "repeaters." They stay in one grade or room term after term, and hardly advance any in their studies. There are about 3,000,000 such children in the United States, and it costs about \$100,000,000 to educate or try to educate them. A very large majority of these 3,000,000 repeating children can be kept from repeating by relieving them of their physical diseases or defects. All repeating children are a detriment to everybody in the school room, and they should either be cured of repeating or else placed in separate schools. They frequently hold back an entire class, for the teacher either has to neglect the balance of the class for their benefit, or the progressive scholars are taught at the expense of the laggard.

To the layman one of the most apparent evidences of adenoids is more or less obstruction to breathing through the nose, and this symptom, when sufficiently marked to be noted by school inspectors, and to warrant official notice to parents, exists in from 6% to 25% of school children, greater among the poor and the young. The maximum figure for the well-to-do is 12% and this is the minimum of prevalence among the poor. Cornell, who has done much investigating in this line, says, "Remembering that the statement is necessarily made on individual judgment, it has been found that three-fourths of all adenoid cases suffer in some degree from defective hearing." If this be true, then Allport's estimate of 6,000,000 children with adenoids and tonsils in the United States should show 4,500,000 with defective hearing instead of the 1,000,000 as claimed by him. The effects of defective hearing are stoop shoulders, and flat chest, which result in an increased liability to tuberculosis, lowered scholarship from a moderate degree of deafness and marked mental deficiency with possibly defective speech and deaf-mutism when the deafness is absolute, blank facial expression from being cut off from what is going on around them, and a peculiar temperament due in part to the introspection which isolation creates, and in part to suspicions engendered by friends' and neighbors' actions which are seen but imperfectly comprehended.

I doubt not that the membership of this Congress is thoroughly convinced of the great value from every viewpoint of medical inspection of schools, and the harmonious coöperation therewith of the teaching

body, and believes that large dividends are returned therefrom on small investments. It seems probable that the total annual expenditure for medical inspection of schools in the United States is at the present time but little over \$500,000. The money saved by enabling thousands of children to do one year's work in one year, instead of in two or three years, would greatly exceed the total expense of examining all children in all of our schools. We now know the major effects at least on intellect and temperament of some defects, adenoids, decaying teeth, and minor physical deformities; and we also know how much deviation from normality can be readily and inexpensively detected and remedied, but there are whole States where no advantage whatsoever is taken of this knowledge, and in practically every State in the country there are communities in which absolutely no attention is paid to any of these matters.

Yearsley, of London, in an article on "Deafness in Relation to Medical Inspection of Schools," advises general examination of all pupils by the school physician, in the presence, and with the help, of the teacher, and the putting apart of all deaf cases for further examination by an official otologist; of all such cases 50% can be cured, and a large proportion of the remainder can be more or less improved. "It means an augmentation of the number of normal, self-supporting citizens, and a corresponding decrease of paupers and criminals—actual and potential." The slightly deaf, and the better cases of the semi-deaf can be perfectly well taught in special classes in ordinary elementary schools; the former in even ordinary hearing classes if they be placed in the front rows, and the teacher gives them attention. He recommends for the semi-deaf, in each school district one or two special classes for those too deaf to obtain full advantage of the education offered them in an ordinary class, and the placing of them in the charge of an elementary teacher who is qualified also as a teacher of the deaf.

Along the same line Dr. John Dutton Wright, the well-known teacher of the deaf in New York City, says, in the latest number of the "Volta Review," for June, 1913, that a very large number of pupils in our public schools are struggling along with defective hearing in the regular classes of forty or fifty with a single teacher. They should have special attention given them in small groups of fifteen or twenty. Examination of the more than half a million pupils in the public schools of New York City revealed the fact that one in each 100 has sufficiently defective hearing to be seriously handicapped in the regular work of the school; yet these pupils are in no sense candidates for an institution for the deaf. They do not belong there and should not be sent there. Most of the public school buildings in New York contain about 2,000 pupils. There are, among these 2,000, twenty pupils then whose education

should receive more and special personal attention than is possible where one teacher is responsible for forty or more pupils.

Diseases of the ear seem, therefore, to be of economic importance in school children because,

1. In their acute forms they lead to a certain amount of absence from school, and absences are a most patent factor in *retardation*.

2. In their suppurative forms they become a distinct menace to the life of the individual.

3. In their more chronic forms they result in defective hearing, *the* physical defect constituting the greatest bar to progress in school.

4. Through impairment of hearing they cause a large proportion of the total number of defectives and incorrigibles, truants and idlers, a portion of whom go later to join the ranks of the criminal classes, becoming an expense, and a charge to the State in reformatories and prisons.

5. Through impairment of hearing they swell largely the ranks of the so-called "repeaters," to educate whom costs an entirely disproportionate amount, besides interfering materially with the education of their normal hearing class mates.

6. By virtue of their causation, and through impairment of hearing, they are an element in the production of stoop shoulders and flat chests, which result in increased liability to tuberculosis.

7. Finally, sufferers therefrom with impaired hearing require for their adequate education separation from the normal hearing, and teaching in limited classes, and with extreme deafness residence and teaching in special institutions where articulation and lip-reading must be taught in order to avoid the otherwise resulting deaf-mutism.

SCHOOL DOCTORS IN NORWAY

BY

M. K. HÅKONSON-HANSEN

The Norwegian law of the 26th of June, 1889, about *the public school in the country* decides in par. 13 as follows: "In order that the health condition of the school can be constantly looked after, the school superintendent shall appoint a doctor, if the district superintendent has agreed to it." Also the law of the same date about the public school in towns has the same decision (par. 14). On the contrary, the law of the 27th of July, 1896, about the higher board schools has a more definite decision, according to par. 66, as follows: "In order that the health conditions of the school can be constantly looked after the directors have to appoint a doctor, whose work in the service of the school is to decide in special instructions made out by the superintendent."

The result of these legal decisions has been that only a few country communities have been able to appoint a doctor to look after the hygienic condition of the school and its activities. Money is needed for that purpose and the country communities have generally not much money. For ordinary citizens who are not well-informed regarding schools, it is perhaps difficult to comprehend the necessity for such an expense as is needed for the pay of a school doctor. One has therefore in the most of the districts of Norway, been satisfied with an occasional insight which the health commission of the district, through its superintendent (the district doctor), once in a while rightfully enough between long periods is able to accomplish.

One has in the towns, as a rule, arranged that the so-called town doctors, who have their own part of the town and whose public practice (the poor practice), and the health institution, they have to take care of and have also the health condition in the public schools within their part of the town. For this service they receive quite a small addition to their salaries. Both for the reason that the salaries of these doctors are inconsiderable and that their extensive practice engages the most part of their working power and interests, they only become, to a small extent, *school doctors*. Any collection of material for study and scientific work is not, as a rule, made and one therefore hears little about their activity as school doctors. However, in one direction, one has advantage of the connection of these doctors with the school. They have occasion, as health inspectors, to guard against contagious illnesses getting into the school and spreading through the school. With their intimate

knowledge of the condition of the illness and health in and around the homes within the part of the town concerned, they could at once be able to forbid children, in whose homes a contagious illness has broken out, from coming to school, as also they could inform the school and give a declaration when the contagious danger is over. If we have not in our town doctors, in any way real school doctors, they do, however, act as a health policy for the school.

Neither does one hear much about those doctors appointed to the higher schools. I know only a few examples of such hygienic examination made on the doctor's own initiative, which could enable me to say that scientific school hygienic interest had been present. The salary of these special school doctors is also, naturally, so small that the practicing doctor almost, if not quite, disappears. As before mentioned, the legal decision regarding the higher school is thus stated that there shall be a school doctor and reasonably he is there also. In practice, however, and from a strong modern school hygienic point of view, he will be difficult to discover in our country.

The question regarding the school doctors concerning Norway has also been solved; but this can hardly be recognized as being an ideal solution, though it is to be preferred in a municipal-economical respect. On the one hand it is to be noted that Norway has consistently carried through school institution; no one avoids taking his part of the life at the school desk. Therefore a strong consistent hygienic insight would have its great significance for the development of the school children. On the other hand it ought to be taken into consideration that Norway is an open-air country. We have not the great world cities with the narrow streets, and the country is the land of sport "par excellence."

Everything considered under the question it may be that the present solution is the one which best answers the social needs at the present time.

MEDICAL INSPECTION OF SCHOOLS IN MANILA

BY

MIRIAM E. GRIFFIN

Although a system of medical inspection of schools was instituted in Manila several years ago by the Director of Health, Dr. Heiser, the work upon which this paper is based was established in October, 1911.

Perhaps I shall save some misapprehension by stating that this article deals only with the work in Manila.

Before speaking of the work I wish to call attention to a few points in which the Manila schools differ from those of the Occident.

In the first place the pupils of the public schools are with very few exceptions, drawn from the poorer class; the children of the upper class Filipinos and of the European residents, being sent to private schools at home or abroad.

Another fact is that while twenty-three of the thirty-one city schools of Manila are primary schools, still, owing to the previous lack of education and to the large number of children applying for admission to the city schools, the age of the children is greater than would be naturally expected.

Children seldom enter under eight years of age and in the third and fourth grade the range of ages is from fifteen to twenty-five.

Another factor affecting the work is the lack of a common language. I uniformly carry on my questions in Tagalog as the children in the first grade are just beginning the study of English and even in the third grade their command of English is so slight they are unable to comprehend the questions. On one occasion in examining some Chinese boys I asked the question in English, the teacher repeated it in Tagalog, a pupil in Chinese; the answer being returned by the same route.

In the beginning of my work I found considerable fear manifested by the children. In the first school examined several of the pupils failed to appear in school during my stay. Most of these children had never come in contact with a physician before and were full of the superstitions acquired at home.

In some cases they expected that the admission of the presence of symptoms of disease would be followed by the administration of medicine which would result in immediate death. Seeing that no medicine or other injury followed, confidence increased and after repeated examinations the "Doctora" became an unfeared and not unwelcome visitor.

In spite of the absence of medical inspection and the unhealthful

conditions existing in the homes skin diseases are not as prevalent as might be expected.

The teachers keep a strict lookout for scabies, sending these cases to the "Dispensary" or health stations for treatment. In most of the schools water and wash basins are present and the pupils are instructed in their use.

Instruction in certain branches of hygiene, more especially in the care of infants and in the causes and prevention of tuberculosis are included in the curriculum. Owing very largely to the poverty of the people and also to their ignorance of the cause of disease, infant mortality is very high.

Fear of night air and the indifferent attitude of the people toward tuberculosis are potent factors in its spread. In the children educated in the city schools a very different attitude is manifested; the earlier symptoms are frequently recognized and their presence regarded with apprehensive dread.

Instruction in domestic science is elevating the standard of living and consequently, favorably influencing the nutrition and vitality of the people.

This instruction is given chiefly in the form of preparing school lunches, one hot dish being provided each day and sold for two centavos (one cent U. S. money).

I find after three or four months in school that the children are less anemic than at the beginning of the year. A part at least of the credit is due to the school luncheons.

Some credit is also due to the gymnastics and athletics which have their place in the school work.

Certain diseases which are especially to be dreaded at home are almost if not quite unknown here. There are no epidemics of scarlet fever to fear, diphtheria is infrequent and mild in form as a rule.

Measles is less severe than in colder countries while only a few cases of whooping cough and mumps appear each year.

The procedure followed in examining the children is as follows: Each child is called up in turn and given an examination of eyes, ears; nose, mouth and throat, and investigation for traces of lung, skin, glandular and infectious diseases. For each child is filled out a printed card giving school, grade, name, age, address, sex, nationality, date of examination, diagnosis, action taken (whether excluded from school, sent to dispensary or private physician for treatment, or not sent for treatment. Later is recorded whether the child reports for treatment or not and the results of such treatment.)

If the child is in need of treatment a printed form is given initialed by the Medical Inspector of Schools, referring him to dispensary or

private physician for treatment. This form is shown to the parents first and later presented to the physician to whom application is made for treatment who records on it the date and character of treatment with results, if possible.

This method of examination requires an hour or longer for the inspection of forty children, depending on the number of physical defects found new for the question of treatment for the school children is a problem which has received considerable attention.

Practically all the children must be treated at government expense and even when free service is offered them their confidence must be secured and their interest or that of their parents obtained before they will apply for treatment.

My first six months' experience showed me that it would be very advantageous for the physician with whom they had become acquainted during the examination to conduct the treatment, therefore, at the beginning of the present year a series of afternoon clinics for school children was established under the direction of the Medical Inspector of Schools.

As Manila is a large city and consequently the school districts are widely separated these clinics were held in three different places, the Dispensary of the Philippine General Hospital and two of the health stations, thus enabling the children to receive treatment as near their homes as practicable.

That this plan has been reasonably satisfactory will be shown by the fact that of 1,649 cases reporting for treatment 909 came to the school clinic.

Perhaps I should explain that school hours are from 7.30 A. M. to 12.30 P. M., and therefore all pupils are free to attend a clinic from 2 to 4 in the afternoons.

A free dental clinic especially designed for the treatment of school children was offered at the beginning of this year, but it will require some little time to make this clinic a success. Dentistry is a new art to the Filipinos and their fear of pain is so great that I have found it practically impossible to induce the children to attend the clinic unless severe toothache added a strong incentive.

During the school year of 1912-1913 fifty-seven schools were examined; the total number of children aggregating 24,665.

In this company 7,619 cases of disease were found. The number of children affected was somewhat smaller, as on some occasions three and even four pathological conditions were found coexistent in the same child.

As may be readily inferred from statements already made dental caries is the physical defect most frequently found, 2,944 out of the 7,619

cases falling in this class. Next in order of frequency come diseases of the respiratory tract.

Acute and chronic bronchitis are very common, while in every school exist cases of tuberculosis, although they are more often found in the intermediate and high schools. In addition to the active cases of tuberculosis are those conditions which are so frequently early symptoms of tuberculosis; tuberculosis adenitis, myalgia, gastritis, anemia and constant headache. As a whole this group numbered 1,405.

Another important and troublesome series are the skin diseases, however, favus, pediculosis and scabies are constantly becoming rarer. Tinea is very frequent, partly because physicians have overlooked it in treating more serious symptoms, and partly because the natives supposed it to be incurable.

Another condition which I have found characteristic of the Filipinos in the Manila schools has led me to believe exists in other parts of the Islands is defective hearing. Bodily deformities as a whole are rare, but malformation of the external ear is not uncommon. Total deafness of one ear or defective hearing is common, normal hearing infrequent and acute hearing rare.

My experience with the Chinese and European children is, of course, most meager, as compared with that with the Filipinos, but I do not find these conditions existing among the two first mentioned classes.

Hypertrophied tonsils and adenoids account for some cases, but as they exist in a far smaller number of cases than among the Caucasian children this factor is inconsiderable.

As may be imagined securing a history of previous ailments is a difficult feat, but I believe that where the subject of the etiology of this condition has been satisfactorily investigated neglected cases of otitis media in infancy will be found to account for a large proportion of such defects.

Diseases of the eye form a prominent group also. With the opening of each school year new students being a fair array of trachoma cases, 2,894 this year. As every case is referred for treatment the middle of the year sees the majority of them improved or cured.

The cases of refractive error are not as numerous as they would be among an equally large number of white children for the Filipino people as a whole have good eyesight.

Certain problems of school hygiene which exist in colder countries cause very little trouble here.

Every school is to a limited extent an open air school and if the crowded conditions could be relieved and the buildings constructed primarily for school purpose they might be entirely so regarded.

The majority of the school buildings are former Spanish residences. The buildings are two stories in height. The first story on a level with

the ground being intended for stables, storerooms and servants' quarters, and partaking, in its light and ventilation, of the nature of a basement. In the second story intended for residence purposes, the rooms are large, the ceilings high, the windows spacious and numerous, and the ventilation good.

The number of children applying for admission to the schools is so great that every available foot of space must be utilized, including the first story and even the inside rooms of the building. Two of the buildings used are built on the best model suitable for buildings in a tropical country, having a square inside court. This allows windows or doors on two sides of each room and gives the cross current of air so necessary for comfort in this climate. It also permits one set of windows to be closed for protection from the sun while the other may remain open.

The Bureau of Education has just completed the construction of a concrete school building, the third in Manila, and plans are complete for building two more. All these buildings are constructed along the newest and most approved lines of school sanitation. It is intended that one or two new school buildings shall be erected each year so that a few years will see a group of up-to-date school buildings.

Plans are in progress for an open air school for the treatment of tubercular children and as the Training School of the Philippines General Hospital is turning out a goodly number of competent nurses each year, it is hoped that before long some of them may be detailed to work among the school children.

SESSION TWENTY-TWO

Room E.

Friday, August 29th, 2:00 P.M.

MEDICAL INSPECTION (Part Four)

ABRAHAM JACOBI, M.D., *Chairman*

DR. CHARLES SUMNER JONES, Buffalo, N. Y., *Vice-Chairman*

Program of Session Twenty-two

FLORENCE A. SHERMAN, M.D., Medical Supervisor of Schools, Bridgeport, Conn. "Medical Inspection in Bridgeport (Conn.) Public Schools. Brief History, Methods Used, Results Obtained and Conclusions Drawn."

ALFRED B. MORRILL, M.A., Superintendent of Schools, Wallingford, Conn. "A Working Plan of Securing Adequate Medical Inspection."

GEORGE P. BARTH, B.S., M.D., Chief Medical Inspector of Schools, Milwaukee, Wis. "The Scope of Medical Inspection of Schools."

WALTER W. ROACH, M.D., Supervisor of School Medical Inspection, Fourth and Fifth Districts, Philadelphia, Pa. "The Importance of Proper Nutrient for Retarded Children—A Demonstration."

R. KAZ, M.D., Consulting and School Oculist, St. Petersburg, Russia
"Pretended Ocular Diseases in Schools."

ARTHUR C. SCHAEFER, M.D., Deputy Health Commissioner, Buffalo, N. Y. "The Scope of Medical School Inspection in Buffalo."

FRANK OVERTON, M.A., M.D., Health Officer Patchogue Village and Brookhaven Town, Long Island, N. Y. "Health Officer and the Rural School."

EDWARD PISKO, M.D., Dermatologist Fordham Medical College, N. Y.
"Skin Diseases in School Children."

WILLIAM J. GALLIVAN, M.D., Chief of Division of Child Hygiene, Department of Health, Boston, Mass. "Standardization of Physical Examinations."

Papers Presented in Absentia in Session Twenty-two**(Read by Title)**

Dr. MIGUEL R. SOBERON (de San Luis Potosi). "Jalones o indicaciones rudimentarias para la Inspeccion medica de las escuelas en los Estados pobres."

HOMER H. SEERLEY, LL.D., President State Teachers College, Cedar Falls, Iowa. "The Hygiene of the Janitor."

MEDICAL INSPECTION IN BRIDGEPORT (CONN.) PUBLIC SCHOOLS

Brief History, Methods Used, Results Obtained, Conclusions Drawn

BY

FLORENCE A. SHERMAN

History of Work. If I understand rightly the meaning of this Congress it is for interchange of ideas regarding the different department of school hygiene, especially along practical lines, and to take advantage of the splendid opportunity for learning much which will be most valuable to us in the further development of our work. My contribution is essentially practical, and if anything which I may say should merit discussion I hope it will be frankly critical, as in reviewing the work I feel that many things might have been done much better, and I shall welcome any suggestions favorable or otherwise. I am an enthusiast and an optimist regarding this work, and I cannot see how anyone doing it can fail to be. In my judgment the most hopeful and vital Public Health measures before this country to-day is the medical inspection and oversight of school children.

Three years ago this coming September I was asked to go to Bridgeport and establish a system of medical inspection for the public schools. This was not an easy task, especially in the face of a good deal of opposition, and the fact that I was to begin the work alone. The work in Bridgeport is under the Department of Health, which seems to me the logical place for it.

As yet Connecticut has no adequate school legislation. We have only a permissible law regarding medical inspection, and no law regarding the enforced correction by parents or guardians of defects found; the only requirement being the testing of vision of school children by teachers biennially. There are 26 schools in the city of Bridgeport with a registration of 16,558—15,656 belonging to the grammar grades, to which my work so far has been confined. The parochial schools refused the inspection, with the exception of two smaller ones. My first round of schools was rapidly made in order to get an idea of the conditions to be met. At this time there were no clinics for school children in existence, and no nurses for follow-up work, so that the majority of cases responding were the results of notification cards sent to the parents. The defects receiving particular attention at this time were those common in all schools, teeth, nose and throat, eye, ear and skin. Some of these cases were cared for by private physicians, surgeons and den-

tists. Others were treated by doctors who gave their services at their offices or the hospitals. At this time 26 dentists of the Bridgeport Dentists' Society agreed to take two children each for the period of one year and put their mouths in sanitary condition in order to demonstrate the value of perfect mouth hygiene and the consequent improved mentality of the child. Owing possibly in selecting these cases from different schools instead of from one, in which better control could have been kept, lack of appreciation on the part of parents and their failure to insist on keeping of appointments, this plan had to be abandoned; and until a practical method could be evolved dentists would aid by taking care of a certain number of cases for the relief of pain. Even this was a great help in lessening school absences.

During my first round 15,743 pupils were examined—10,894 defectives were found and there were 809 responses from the notification cards sent out. Sanitary condition of buildings was reported upon and improvements suggested. During the latter part of the first year a school nurse was appointed. This was a most valuable and necessary addition, as by this means only is it possible to vital parts of this work—the follow-up work in the homes. At this time I succeeded in establishing regular clinics for school children—those for the eye, ear, nose, throat and skin. These clinics were conducted by specialists who gave their services for one hour twice a week. Many children receiving care which they could not have had in any other way. At this time the Department of Health asked me to prepare a pamphlet, Rules and Regulations for Inspector and Nurses so that we might work under definite system as soon as possible. The question of records and literature to be used in this department was an important one. I here wish to acknowledge valuable suggestions from my well-known colleague Dr. S. Josephine Baker, Director of Child Hygiene, Department of Health, New York City, and also her courtesy in extending to me the use of a series of cards and pamphlets used in New York schools in connection with the various defects found. These cards being modified to meet our own particular needs; these with some devised by myself, gave us a good working basis.

My second year's inspection was conducted along very much the same line as my first, with the exception that we had a more definite system of records, notification cards, and more literature for distribution, and I was able to do more regular follow-up work, and also begin my class-room talks.

During this round, 13,840 children were examined—4,211 defectives were found, and 1,585 responses were received from notification cards, a slight increase in numbers over the first year. The largest individual response in point of defects were from teeth, adenoids and tonsils, skin,

and defective vision. Sanitary conditions of buildings were noted, and suggestions for improvements advised. Two hundred and eighty-seven class-room talks were given.

During this past year the routine examination extended only to the 7th grade; beyond that I saw only cases referred to me by principals or teachers. It seems to me this essentially covers the ground, as beyond this grade the majority of defects have been corrected or have disappeared, and I shall continue this method the coming year. The nurses' follow-up work during the past year was considerably increased—2,229 home visits being made.

Up to this year no attempt was made to treat any cases in the schools except emergency ones, but owing to the appointment of an additional nurse, I decided to do so, in the schools in the more congested part of the city. The cases treated were largely skin, injuries, etc. In all, 903 cases were treated.

Entire time given to the work—9.30-4.30; 9.00-4.30.

Methods Used. My daily program is this: 9 A. M. each day to notify the Health Department in what school I am to work; unless some emergency call has been received at the office making it necessary for me to go elsewhere. Upon reaching the school I notify the principal that I am in the building and ascertain if there are any special cases to be seen. If not, I begin my routine examinations in the lowest grades. Defects examined for are those common in all schools. The records used in the class-rooms have been made out by the teachers at my dictation. The sheet contains the name of pupil, date, defect found, advice given. Result, carbon copy is made one being kept in the class-room for the Board of Education, the other for the Board of Health.

Children are examined in file, defects being indicated to the teacher by code number. Notification cards sent out are stamped in advance with my signature. These are filled out by the teacher and sent to the parents by the child. I am not at all satisfied with this method, for I am not sure that these cards always reach the parents and I am inclined to think that perhaps a good way to get at this would be to have the card provided with a stub which has to be signed by the parents and returned to the teacher. With our present working force a mailing system is out of the question.

The various defects each have special cards with suggested prescriptions on the back. These cards are printed in five languages. All cases of Scabies and Live Pediculi are excluded. Other cases of Pediculosis, Impetigo, Ringworm, are allowed to remain in school if under treatment. Special cards are used for exclusion cases. We hold ourselves responsible for all cases excluded, the nurses looking up these

cases if the pupil does not appear at the approximate time indicated on the card. I wish to acknowledge the universal willingness and oftentimes eagerness of the teachers in helping me with these records. Without their coöperation it would have been impossible for me to accomplish this work because of the large field and the limited force of assistants.

At the end of each routine class-room inspection I go over the list of defects stating the importance of correction and advising prompt attention from their own doctors as far as possible. In addition to this teachers are asked to remind the children of these directions given from time to time. Just before the end of the school year teachers take these lists, going over them, filling in the "result" column. These records are collected by myself or nurses and reports made out from them.

My work may differ from some in that after finishing the routine examination a point is made to take up some matter of personal hygiene—subject of baths, value of fresh air, sleep, sunshine, food, food values, clothing, etc. These talks are of course very brief, but I believe they are very important, and should be a part of the work of every school doctor and a very vital part of it. I have been amazed a number of times at the results short talks have brought about.

The custom is to give my nurses each night a list of cases for follow-up work the next day. The follow-up work this past year has been confined largely to nose and throat cases and those of anaemia and malnutrition. The decided increase in response to these cases this past year I attribute largely to the tactful work of the nurses in the home. Nurses submit to me each night a report of the day's work. These, with my own report, are daily, weekly and monthly rendered to the health officer. Our monthly reports being published in the Health Bulletin issued by the Department.

Whenever a contagious case is reported in the schools it is looked up at once, a history of its development gotten from the teacher, and a routine examination made of every child in that room and a report made to the health officer. If any sore throats are found swabbings are taken and these pupils are sent home to remain until reported upon. In scarlet fever cases we have the desks, books, seat, floor of the child taken ill, and also those in the immediate vicinity sprayed with a 40% solution of formaldehyde. This is done by the janitor as soon as the case has been discovered, and later a complete class-room fumigation is done by the Health Department. There is no quarantine for measles, mumps, whooping cough or influenza in our city. This I feel is a mistake, for I believe that prompt isolation of first cases would prevent wholesale absences and lessen materially the after-effects of these so-called "harmless diseases." During the past year we have been running only two clinics for school children directly under the control of the Board of

Health. These are the eye and skin clinics. The nervous orthopedic, nose, throat and medical cases have been taken care of at the two hospitals by specialists who hold clinics for these cases on certain days. This change in the clinical program was due to financial reasons which the Health Department could not seem to overcome. I feel that in some way we must this year maintain our own clinics for school children. For by this means only can we keep control of our cases, and bring about larger results. At our Health Department clinics, held twice weekly, a nurse is always required to be in attendance to assist the doctor in charge; she receives the patients, card indexes the cases according to schools, notes treatment given, date, etc. She also by postal notifies the principals of cases needing repeated treatments, and when, also the termination of all cases. In our eye clinics glasses are furnished whenever the child needs them and is unable to pay. A very valuable adjunct to our department is a bacteriological and pathological laboratory which is well equipped and in charge of a competent bacteriologist and pathologist. Our sputum tests, blood counts, throat swabbings and urine tests are all taken care of here.

I hold an office hour every day at the Health Department from 3.30 to 4.40 P. M. to see any children who may be sent in for examination and diagnosis, and also to issue permits for the re-entrance of exclusion cases.

Results Obtained. In looking back over three years of work some gratifying results are seen. We are getting cleaner children. It is the exception now, not the rule, to find live pediculi. This is a decided gain. Much more attention is being paid to mouth hygiene. This is especially true of children entering school the first time.

I am expecting to introduce into the schools this year a card index system for the keeping of physical records. Each child to have his own physical record card which will go with him from grade to grade, from school to school, and if need be from city to city. This card is planned to cover a period of six years and will be kept in the class-room in connection with the class record card. It seems to me these combined records should aid very materially in classifying and in individualizing the work. These cards will be printed with the necessary data so as to require the least possible filling-in by the teacher. The defects will be checked off by code number, the key of which is printed on the back of card. This card index system will be carried out throughout the entire department, and will, I hope, very materially add to the accuracy and simplifying of reports for statistical purposes.

Standardization of this work in all its departments is what we are anticipating.

There is also a very marked decrease in the contagious skin diseases. Teachers are showing more interest than ever before in the general physical condition of the children under their charge. Many more cases of anaemia and malnutrition have received attention. My practice in these cases has been to talk to these children *individually*, especially regarding mouth hygiene, proper food, fresh air and baths, and in many cases have written personal letters of suggestion to parents. More attention is being paid to ventilation of class-rooms. In addition to the installed ventilating system (the majority of which I believe to be most inadequate), we have had window boards put into many schools. In my judgment there is nothing better than this old-time method with interval air flushings of class-rooms. This latter is by no means generally practiced. One of the most difficult things to meet in the work is bringing about proper temperature and ventilation. More attention is being given to the cleaning and ventilation of toilets. We have yet to devise some better method of cleaning school buildings. I understand the prospects for this coming year are good. Since medical inspection was started sanitary drinking fountains have been installed in the schools, toilet paper and sanitary towels and soap have been produced and emergency boxes have been placed in the principal's office in every school. Among the encouraging things the coming year is the prospect of two additional school nurses and the establishment of a dental clinic. Both very great needs.

This past year the Board of Education was granted \$5,000 for the establishment of a prophylactic dental clinic.

If this is carried out I understand it will be the first dental clinic in this country of its kind. I believe that in this way *only* is it possible to do any *lasting dental work*.

Conclusions Drawn. I believe the future medical inspector must be an educator.

At the close of my three years' work I am more and more impressed with the tremendous scope of this work. I feel we have not gotten the results in Bridgeport that we should. The question as it stands to-day is *fundamentally an educational one*, and we are facing a problem which every city of its character is facing, that is, what can we do to *educate the masses* and make our work better known and its *true value felt*? 1st, I believe we must have the support of adequate school legislation. 2nd, I believe we must have closer coöperation between the departments interested in these subjects. 3rd, by having the individual interest of members of the department under which we are working, and most important, 4th, by increasing our force of nurses in order to make it possible to do more thorough follow-up work in the home. The educa-

tional value of this is far-reaching. A nurse has an opportunity not only to explain the nature and importance of correcting physical defects found, but to teach personal hygiene, sanitation, proper foods and their preparation, the subjects of which most of these people know nothing. My experience has been that not only foreigners but many of our own *American families* need enlightening along these lines. 5th, I believe that more careful explanation as to the nature of the defect and its needed correction should be made by the doctor in the class-rooms, especially in grades where children are old enough to understand this, supplementing these talks as far as possible with appropriate literature, to be taken into the home. 6th, I believe that our schools should become social centers; that parents' and teachers' associations should exist in every school. 7th, also we should provide lectures and illustrated talks on defects found in school children, personal hygiene, house sanitation, foods and their proper preparation, 8th, and that we urge greater coöperation of teachers along these lines. 9th, I believe that medical inspection should be the means of introducing into our schools more attention to the study of hygiene. In the State of Connecticut to-day only 20 minutes a week are required for this most important branch, and it is not taken up until the 4th grade is reached. This I feel is most lamentable. I am hoping that the Superintendent of Schools will approve of some ideas of mine regarding the teaching of hygiene which I hope this year to try out in one of the kindergartens. This is to be done by the use of a doll. I should treat this doll as nearly as possible as I would a child. This can be used to teach very young children the fundamental rules in the form of play, and that the subject of bathing, dressing and undressing, proper clothing, sleep, putting to bed, value of fresh air, feeding, mouth-hygiene, can be made most interesting to children, and they unconsciously be learning the vital principles of life. 10th, I feel Domestic Science courses in the schools should have a very close relationship to our work, especially have I come to feel this this past year from the number of cases of anaemia and malnutrition that have come under my observation. The main solution in the treatment of these cases is *proper feeding*, fresh air, baths, sunshine, etc. I believe we might offer some valuable suggestions in connection with these courses and that this part of the school work should be taught in the grades much lower than it is. It seems to me that the courses given to children should be along the most practical lines; that they should be taught the value of *inexpensive foods*, and the proper preparation of them. This to a certain extent is being done in our Bridgeport schools. 11th, I am a great believer in school *lunches*, and am much interested in the work of Miss Winifred Gibbs of the New York Association for improving the condition of the poor, who has contributed such valuable data along this

line. I also feel that we should have mothers' classes of Domestic Science held in our schools each week. Back of this comes a splendid foundation work that has been taken up in New York City this past year. Talks to expectant mothers—pre-natal work—which after all is the only way to get permanent results.

12th, Open air classes have been talked of with us and are greatly needed, but so far no definite action has been taken regarding them. Baths are greatly needed in our schools; in looking up this matter in various cities and towns where they have been installed, reports are most enthusiastic. In one school the use of the bath was made a reward of merit. 13th, I also believe that the Board of Health and not the Board of Education should have the issuing of work papers, as is done in Connecticut to-day, that each child should present himself to a doctor for examination when he wishes to leave school, and that upon the result of that examination should depend the giving out of work papers. 14th, I also think that all persons assigned to school work should submit to a physical examination before they are assigned to schools.

Another important problem which we are facing the solution of which I believe should begin in this department, is the subject of sex hygiene. It is indeed difficult to know the best method of procedure. It should begin in the home, but until parents realize this and assume it, the schools will have to. I believe that ultimately it will be taught through the sciences, but in the meantime medical men and women who are working among school children must take the initiative. I feel that I cannot go on much longer in this work without touching this matter in some way. When we remember that the majority of public school girls and boys leave at the age of 14 years, and go out into the world to earn their living without any accurate knowledge regarding their bodies and the care of them, or their vital relationship to each other, the condition is to my mind appalling.

One sees such a wide field for work that it is hard to possess one's self in patience. This Congress cannot help but be the means of bringing about more efficient supervision in all schools. This means greater certainty of *future efficiency*, *less interference* with school work from epidemics, greater improvement in class-room activities, more health and happiness in the home, better investment for the tax-payer, higher citizenship for the community and the conservation of human life—the greatest asset in our country. A physically impaired child usually means a physically unfit adult. The way to gain physical health is to begin with the child. I believe in a few years to come health and happy citizenship will be the results of our present day efforts.

A WORKING PLAN OF SECURING ADEQUATE MEDICAL INSPECTION

BY

ALFRED B. MORRILL

A study of the value of adequate medical inspection will suggest the method of securing its adoption in a school system where it is not now in force.

The spirit of conservatism even in its physical aspects of the subject as it affects soils, forests, ores, or the forces of nature, has aroused a new conscience in the peoples of the world. This, I believe, is primarily because these reach forward and affect life.

The ultimate test of the value of these things that are measured in dollars and cents is their force in determining conditions of life now or in the future.

I am speaking in this paper of conditions that prevail in our own country where local policy is determined by local action.

It is the genius of government in the United States to allow the development of such a system to grow, just as the government itself grew, from local to state and from state to national proportions. This is one of the penalties of democracy, if you please.

And while the present status of medical inspection in the United States is such that a few states have compulsory inspection in both city and country schools in the great number of states it is wholly a local matter; and even in states where medical inspection is compulsory, it becomes adequate only when the public is educated to appreciate its value.

The problem then of securing adequate hygienic conditions in our schools is one of educating the public. And if it seems to those who hear the papers of this Congress and who are in the van of this movement that the task is small, let me tell you that there is need of line upon line, precept upon precept, in this work of educating the public.

Though there is unrest and though politically there are new measures proposed—the initiative, referendum and recall—yet in educational matters there is a vast amount of conservatism. Especially is this true when it is proposed to spend more money. And even custom holds many people. “Whatever has been is now and ever shall be,” is the creed of the church to which they belong.

The financial aspect of this subject is a theme of great importance. In all communities where money must be voted, a campaign of education not only upon the social and moral aspect of the subject, but upon its financial side, must be inaugurated.

Dr. Leonard P. Ayers, Director of the Division of Education, Russell Sage Foundation, has prepared tables that can readily be adapted to illustrate the financial effect of promotion rates in any school system. They show the effects of different promotion rates from 100 per cent. down to 60 per cent. in

- a. Years required for average child to complete eight grades.
- b. Per cent. of normal size required for school plant.
- c. Failures among each 1,000 children before completing eight grades.
- d. Children in each 1,000 failing before completing eight grades.
- e. Per cent. of children above normal ages for grades.

It cannot be controverted that in any school system in the long run the following theses will prove true:

1. As the promotion rate falls, the time required for the average child to complete the course increases.
2. The lower the promotion rate, the larger must the school plant be to accommodate the children.
3. For each per cent. that the promotion rate falls, there are 70 more failures among each 1,000 children in eight years of schooling.
4. As the promotion rate falls the number of children failing in the course of eight years rapidly increases.
5. The lower the promotion rate, the higher will be the percentage of overage children.
6. A change of even 1 per cent. in the promotion rate in a school system is reflected in terms of dollars, teachers, school plant, equipment, and children's time.

The effect of different annual promotion rates in a school system like our own in which 250 pupils enter each year involves an interesting financial study. Select three promotion rates and modify the table of Dr. Ayers to meet the local condition.

Promo- tion rate	A Years required for average child to com- plete 8 grades	B Per cent. of normal size required for school plant	C Failures among each 250 children in eight years	D Children in each 250 fail- ing in eight years	E Per cent. of children above normal age for grades
100	8.00	100	0	0	0
90	8.89	111.1	175	155	28.8
80	10.00	125.	350	198	48.

EFFECTS OF DIFFERENT ANNUAL PROMOTION RATES IN A SCHOOL
SYSTEM IN WHICH 1,000 CHILDREN ENTER EACH YEAR,
NONE DIE, AND NONE DROP OUT

Promo- tion rate	A Years required for average child to com- plete 8 grades	B Per cent. of normal size required for school plant	C Failures among each 1,000 children in eight years	D Children in each 1,000 failing in eight years	E Per cent. of children above normal age for grades
100	8.00	100.0	0	0	0
99	8.08	101.0	70	68	3.4
98	8.16	102.0	140	132	6.7
97	8.24	103.0	210	192	9.9
96	8.33	104.1	280	249	12.9
95	8.42	105.2	350	302	15.9
94	8.50	106.3	420	352	18.7
93	8.60	107.5	490	398	21.4
92	8.69	108.6	560	442	24.0
91	8.78	109.8	630	483	26.4
90	8.89	111.1	700	522	28.8
89	8.98	112.3	770	558	31.1
88	9.09	113.6	840	591	33.3
87	9.19	114.9	910	623	35.4
86	9.30	116.2	980	652	37.4
85	9.41	117.6	1050	679	39.4
84	9.52	119.0	1120	705	41.2
83	9.63	120.4	1190	729	43.0
82	9.75	121.9	1260	751	44.8
81	9.87	123.4	1330	771	46.4
80	10.00	125.0	1400	790	48.0
79	10.12	126.5	1470	808	49.5
78	10.27	128.2	1540	824	51.0
77	10.38	129.8	1610	840	52.4
76	10.52	131.5	1680	854	53.7
75	10.66	133.3	1750	867	55.0
74	10.81	135.1	1820	878	56.2
73	10.95	136.9	1890	890	57.4
72	11.10	138.8	1960	900	58.6
71	11.26	140.8	2030	909	59.7
70	11.42	142.8	2100	918	60.7
69	11.59	144.9	2170	926	61.7
68	11.76	147.0	2240	933	62.7
67	11.94	149.2	2310	939	63.6
66	12.12	151.5	2380	945	64.5
65	12.30	153.8	2450	951	65.4
64	12.50	156.2	2520	956	66.2
63	12.70	158.7	2590	961	67.0
62	12.90	161.2	2660	965	67.8
61	13.11	163.9	2730	969	68.6
60	13.33	166.6	2800	972	69.3

The rates of promotion, 100, 90, and 80, are given because 100 represents the ideal condition which for obvious reasons is not attainable in any system, while 90 represents the attainable condition in our schools as now conducted and 80 represents the condition of three years ago before medical inspection was adopted and the condition existing now in many schools where less attention is paid to the real causes of retardation. Let us see what the effect is in a change of 10% in the rate of promotion in a small system where 250 children enter each year, where the per capita cost of schooling is \$30.00 and the grounds and building equipment value per child is \$100.00, the condition approximately represented in the school of Wallingford.

The time saved by the 250 children if they complete the elementary course will be 175 years of schooling, representing an annual saving of \$5,250.00 at the rate of \$30.00 per child per year, in a school system of the size of ours.

The school plant for the accommodation of the children of the system would be decreased about \$17,500.

The number of failures among these 250 children in eight years of their school life will be decreased by 67. The number of overage children in the grades would, by the change of percentage of promotions from 80 to 90, be decreased by 230.

There are many causes of non-promotion of pupils in our schools and some of them are beyond our control. The fact to be made clear is that failures of promotion are a large and positive force in increasing the cost of our schools. When the question of establishing or increasing the efficiency of medical inspection is up for action by the public or by those having charge of fixing the budget, it is the wise and the working plan to have a full discussion of the relation of health to school progress.

Here are some facts as to the need of medical inspection and what has been accomplished where adequate medical inspection has been established.

1. *In Contagious Diseases.* It is estimated that 90 per cent. of the deaths from contagious diseases such as measles, scarlet fever and diphtheria occur before the age of ten.

The age of compulsory school attendance is from seven to fourteen and in some cases sixteen years, and all children are received without regard to their physical condition, and grouped according to their mental progress. The authority that has a legal right to compel attendance has a duty to see that no harm shall come as a result of attendance.

Parents, school authorities and health authorities have long known that the school as generally conducted is in the very nature of the case the center of infection in any community.

The right of parents to insist that the schools shall be safe places

to send their children, is recognized in the case of a serious epidemic, and the schools are closed from a single room one day to a whole building for weeks.

It can be shown that in places where a thorough system of medical inspection has been established the number of cases of diphtheria has fallen off two-thirds, and of scarlet fever five-sixths. Before medical inspection was established such diseases as diphtheria were more common during term time but after the introduction of inspection they were less common during term time than during vacation.

Under inspection epidemics are checked or avoided. Parents come to know that the school is a safe place to send their children. The percentage of school attendance is increased. This decreases the number of retarded pupils, and helps to pay the cost of inspection in dollars and cents, besides rendering the whole system more efficient and vastly increasing the economical value of the schools to the community.

2. *In Diseases Not Contagious.* The value of medical inspection is not confined to preventing the evils of contagious diseases. A study of the relation of physical defects to school progress shows a new and important field for medical inspection.

An extensive study of promotions in many schools in the cases of thousands of children shows that the physical handicaps of our children is a great force in determining promotions.

Table showing the extent to which children suffering from each sort of physical defect progress more slowly than do children with no defects:

Kind of Defects	Per Cent. of Loss in Progress
Defective vision.....	..
Defective teeth.....	6
Defective breathing.....	7
Hypertrophied tonsils.....	9
Adenoids.....	14
Enlarged glands.....	15
Average.....	9

Another way of expressing the effect of this handicap of physical defects upon school progress is given in the table below.

Number of years for defective and non-defective children to complete the eighth grade:

Kind of Defects	Time for Eight Grades
No defect.....	8 years
Defective vision.....	8 years
Defective teeth.....	8.5 years
Defective breathing.....	8.6 years
Hypertrophied tonsils.....	8.7 years
Adenoids.....	9.1 years
Enlarged glands.....	9.2 years

The best data obtainable as a result of examination of hundreds of thousands of school children where medical inspection has been established shows that about three-fourths of the children have serious defective teeth, one-seventh have defective breathing, one-fourth have hypertrophied tonsils, one-eighth have adenoids, one-half have enlarged glands.

The important features of medical inspection have a direct bearing upon school efficiency and school progress, and hence upon the reduction of school expenses. The initial cost is more than saved by the ultimate saving, from the lowest standpoint of dollars and cents. A city may well afford to spend \$2.00 for removing a bad case of adenoids rather than spend \$30.00 to \$40.00 to re-educate the child in one of the lower grades and possibly another \$30.00 for another year as a repeater. In point of fact, however, the most of these cases are attended to by the parents, the work of inspection being to point out the defects that need to be corrected.

The director of school hygiene under an adequate system of medical inspection has brought about more efficiency methods that involve vast savings than any other force in school administration.

Improved ventilation may cost little and save large sums in salaries of extra teachers to take the place of those made sick by foul air, and still larger sums to pay for educating the children who repeat grades through sickness and dullness of mind caused by the same foul air.

These things are not attended to adequately without the advice of those who know and have authority as medical inspectors.

Outdoor schools are being established for tuberculosis and anaemic children. Such children without exception gain in health and strength and in school progress. The cost of such schools, even where lunches are served free, is no more than the cost of their regular school owing to the saving in fuel and other items. And how great is the value of these schools to the community, preventing the blind destruction of many young lives wherever they are established!

The tremendous waste of money trying to educate defective children in the regular classes and by the regular courses of study is yielding under the study of the medical expert and this crime against society will not much longer be tolerated. These children, under the advice of the trained inspector, must be separated from the normal children for the good of all and each child in the whole system must receive as fully as possible the training for which he is fitted, so that he shall be working up to the measure of his ability. Teachers will coöperate with an expert in this work.

Physical training of pupils and the playground activities are a part

of the whole movement. "A sound mind in a sound body," is the motto of all who work together in this great cause.

The old method of fumigating for such diseases as diphtheria or scarlet fever is displaced under medical inspection by sending culture tubes to the State Bacteriological Laboratory, getting a report by telephone on the result and excluding those with positive cultures but continuing the work of the school. If the schools of a system are worth what they cost each day they are in session this change alone will pay the money cost of medical inspection by adding to the length of the school year.

Under medical inspection nothing is done for the parent except to tell him of the need of his child for medical treatment. But this is important, if it is true, that many of our pupils are backward simply because of physical defects that are remediable. The state adopts a policy of compulsory education for its own preservation and efficiency. But it leaves to each community a large measure of responsibility for carrying forward this public education.

Too great emphasis cannot be given to the value of a public presentation of the needs and benefits of medical inspection, in written reports or otherwise, before asking for money for adequately doing the work. A discussion of the financial aspect of the case appeals to the practical men usually composing the councils which fix the budgets or the communities which decide upon items of expenditure. A plan should be presented giving an estimate of cost.

The points to be emphasized in each community may differ but the studies of every phase of the subject by this Congress will furnish a storehouse of material.

A Plan for Medical Inspection. An adequate system of medical inspection has been adopted under the following general plan in many cities of this country:

- a. A daily inspection for contagious diseases.
- b. An annual physical examination of each child.
- c. A system of following up the parents to see that the children have the proper treatment.
- d. Team work in coöperation of teachers, janitors, principals, and superintendent, with the physical director, school nurse and medical inspector in the various phases of school hygiene, having some outline of duties of each.

This work should be done by:

1. The room teachers, who make the vision and hearing tests, and can be taught to select children to be referred to the inspector on his daily rounds. These include (a) those suspected of illness; (b) those returning after unexpected absence; (c) those returning after having been excluded.

2. Medical inspectors acting under the general direction of the superintendent of schools or of the director of school hygiene.

a. Calling at each school as near the opening of the morning session as possible for the purpose of examining cases referred to him by teachers. This could be done quickly, and is chiefly to check contagious diseases.

b. Once a year examining each pupil, and recording the facts on a card for future reference. This could be done at any time in the day, and would take ten to fifteen minutes for each pupil.

Such an examination is fruitless without a system of records and the machinery for following up the cases needing attention. It should be stated here that the inspector is to diagnose cases, not to treat them. The parents must provide treatment. Experience shows that some parents will heed printed notices, but that many require a personal explanation and that some need to be shown how. This has led to the introduction of the most indispensable factor, namely:

3. *The School Nurse.* The doctor visits for a few minutes, whereas the nurse devotes her entire time to the work. She is the most important feature of the whole plan.

Her duties are briefly these:

a. To aid and advise the teacher in the work, and to act in emergency cases until the doctor arrives.

b. To follow up children excluded on account of minor contagious diseases, such as scabies, impetigo, pediculosis, and ringworm. Children excluded because of these diseases often receive no medical attention at home, and return to school only to be excluded again. The experience of all cities has been that the aggregate of absence for this cause alone was enormous until nurses were introduced. This has led to one of the greatest services which the nurse can render, namely:

c. To visit the home and by conferring with the parent, either show her how to treat the case, or influence her to put the children under the care of the physician. These home visits are wonderfully beneficial,

even to the rest of the members of the family, as well as to the pupil. The nurse is the most efficient link between the home and the school. Her work is immensely important in its direct results, and very far-reaching in its indirect influence.

When it is desired to secure more money to increase the adequacy of hygienic conditions in a school system, select from all the material now available that which meets the local needs most fully. If the evidence is presented skillfully it can be shown that good health promotes the efficiency of any school system, the protection of the community and the preservation of lives of the children, and that a strange thing will happen in these times of increasing cost of everything. The better conditions will come about by an initial cost which will in the long run be saved by the decreased cost of maintaining the school system.

THE SCOPE OF MEDICAL INSPECTION OF SCHOOLS

BY

GEORGE P. BARTH

The first beginnings of medical inspection came as a result of epidemics of disease occurring among school children and for many years the discovery and control of the infectious diseases through the schools was regarded as the sole function of medical men in the schools. Although the co-relationship existing between the healthy and normal body and mental function and power was recognized early it was not until within comparatively recent years that this attitude changed and it was comprehended that the best results in preparing the child for its life work could be obtained in a harmonious adjustment of medical science and experience and pedagogical effort.

The whole superstructure of health supervision of children rests firstly upon a fundament of a comprehensive understanding of the physical and mental needs of the child while it is being subjected to the somewhat unnatural process of educational modelling to fit a niche in the body politic and secondly upon the power to provide such needs when they pertain to psychic or somatic abnormalities or environmental difficulties.

Dr. J. S. C. Elington comes very near the mark when he says, "It is an organized effort to help teachers to meet their responsibilities towards these child bodies which control so effectively the child brains which it is their business to assist, to help parents to keep their families healthy, properly nourished, and clean in mind and body, to help the taxpayer to get all that he pays for in the way of primary education (I would also include secondary), and to help build up with more certainty and security a race of strong, healthy, well-balanced men and women." In order that the purposes above expressed may be carried out successfully the duties and privileges allowed a department of health supervision must be broad in scope and rather general in character. As an agency for child welfare it must extend its power and influence in whatever direction the needs of the child demand. This will bring it in contact and sometimes in conflict, unfortunately, with the various departments and organizations having as their function the good of the child but there is no reason why harmony should not prevail if discretion is exercised and it be kept clearly in mind by all concerned that the goal toward which each is striving is the same, *i. e.*, the good of the child. Succinctly stated the duties of the doctor in the school include all matters

that are in any way likely to affect the health and physical welfare of those working in the school.

The primary divisions into which the activities of a medical department of schools may be classified are: I. The prevention of infectious or contagious diseases. II. The prevention, detection, and cure of physical defects. III. Advisory in matters educational.

Of the first but little need be said. The relation between the Health Department and the School Medical Department should be intimate where the latter is under the school board.

In Milwaukee there is a daily exchange of reports on the occurrence of infectious diseases. To the Health Department belongs the duty of their proper isolation in the home and to the School Department the regulation of their school attendance. The control of parasitic and other skin diseases was secured by city ordinance making parent or guardian liable to fine or imprisonment in the event that remedial measures were not instituted at once upon notification by the Medical Department of Schools of the existence of such disease in the child.

Divisions II and III overlap in a measure. I don't think that anyone longer doubts but that the complete physical examination of every child at stated intervals by competently trained men or women will accrue to the benefit, both mental and physical, of the child in its development to maturity. Examination without facilities for the correction, if such is possible, of abnormalities found is but of little consequence and therefore the establishment of school clinics must be an objective feature. I would not go so far however as to say that every school child found defective should be treated at these clinics. The state would make a woeful error if it reduced by one iota the feeling of responsibility in the parent for the welfare of the child. Only such children should be received at the clinics whose parents are found on investigation to be financially unable to provide the necessary care.

The third division is the most important function of the department and because of this function it is so essential that departments of medical inspection of schools or health supervision of school children or of child hygiene should be closely affiliated with, in fact be an integral part of school administration. Of what avail is it to train the mind of the child to a quintessence of perfection if thereby its health suffers or mayhap is wrecked. Fully 75% of children in their battle for success in life will depend much more on their physical fitness than upon their mental acuity or attainments.

The gathering, tabulating and publishing of enormous columns of figures with astonishing totals of the disabilities of childhood has the very important function of showing in concrete form the prevalence, the degrees and the kinds of difficulties and disadvantages which beset

childhood as a whole, or in the particular locality in which these statistics were obtained, in its struggle for existence and advancement but unless they lead eventually to a practical solution of educational health problems they mean but little. In the consummation of this result it becomes necessary then, to help fit the school to the state, the home to the school, the school to the child.

The Board of School Directors of Milwaukee on September 5th, 1911, formulated and passed the following rules for the guidance of the Medical Department and, as will be seen, it gives the department considerable latitude in its work.

1. The Medical Department shall, under the direction of the Board, and the Superintendent of Schools, have a general supervision of the hygiene and sanitation of school grounds and school buildings and of the health and physical welfare of school children, teachers and janitors in matters peculiar to the medical profession and of the manner of conducting medical inspection of schools. He shall appoint subject to confirmation by the Board, Assistant Medical and Dental Inspectors and Nurses, and such other assistants as may be authorized by the Board.

2. The Medical Inspector is the expert adviser of the Board and its committees on all questions of school hygiene, and as such shall be privileged to attend all meetings of committees and the board affecting such questions.

3. He shall perform such other duties as may be assigned to him by the rules of the Board or by the Superintendent of Schools. The Assistant Medical and Dental Inspectors and Nurses shall assist the Medical Inspector in the discharge of the duties devolving upon him. They shall be under his direction and perform such duties as he may require.

The principals and teachers shall see that the rules and directions of the Medical Inspectors are properly carried out.

Under these rules what is the Medical Department called upon to do and what further may it do. Its relations to the School Board and its committees are clearly expressed in the rules and need no further elucidation. All purchases of school material are made by the Board on the recommendation of its committee. This includes everything from the disinfectant used in the schools to the books recommended for the children and purchased from the indigent fund and the department may be called upon and is called upon to pass on their hygienic qualifications. Its relation is advisory to the superintendents and consequently to the teaching staff, to the Compulsory Attendance Department, the Building

Department, the Physical Training Department, the Continuation Schools and in the issuance of labor permits.

Briefly to summarize wherein it aids these. When requests are made for the transfer of pupils from one school to another because of physical defects the Medical Department is called upon to pass on the advisability or necessity for such transfer, as is also the case when a request is made for an alteration in the curriculum of a child. The admission to some and the formation of other special classes such as those for defective hearing, vision, or speech, open air, cripple and mentally defective is based upon the report furnished by the Medical Department. By rule of the Board teachers requesting leave of absence with full pay or on half pay for three months owing to illness are required to be examined by the Medical Inspector or the Medical Inspector and one of his assistants and action is based upon this report. The Medical Inspector is also the Medical Examiner of the Board of Directors of the Milwaukee Public School Teachers' Annuity and Retirement Fund.

The Assistant Medical Inspectors are required to use every opportunity to instruct the teachers in the gross symptoms of disease and to consult with principals and teachers concerning any child in their care which seems to present a special problem. This is in addition to the regular school records on the health of the child.

Should a child be unfortunate enough to fall into the toils of the Compulsory Attendance Department and its failure to attend school, based upon ill health, it is at once referred to the Medical Department for examination. This is especially important in the unstable period of adolescence when many parents are so influenced by their greed for gain as to attempt to sacrifice the schooling of the child. Then there is that other group, the group in which mental responsibility for non-attendance must be determined.

When a case involving a school child is brought into court by the Compulsory Attendance Department upon complaint of non-attendance or parental neglect the records of the Medical Department are accepted as evidence by the court or a member of the department is called in as witness.

In the issuance of labor permits the child's health record as amassed by its supervision during its school attendance should serve largely as a guiding factor in determining whether an unlimited permit should be given or whether the child should be limited to certain kinds or places of employment. A single examination at the time of application for a permit is not sufficient to guide the child in its choice of work.

Recently a new form of school has been established by law in Wisconsin—the continuation school. According to its provisions each child from fourteen to sixteen years of age must attend school five hours

each week on the employer's time. This furnishes a good opportunity for health control of these children during those years. Numerous cases were found of children working in candy factories, in bake-shops with ulcerating sores on their hands, whose person and clothing were unclean. It also gives an opportunity for the teaching of personal hygiene and control during this very dangerous period in the life of the boy and girl.

The department is also in close touch with the relief and charitable institutions and associations of the city and its appeal for aid for destitute families discovered by the nurses in their visits to the homes or by the doctors in their consultations with the teachers, have never met refusal.

In this brief outline I have pointed out a few things which a department of health supervision may do and should do and if anything new has been offered or new ideas of use to others engendered the writer will be more than satisfied.

THE IMPORTANCE OF PROPER NUTRIENT FOR RETARDED CHILDREN—A DEMONSTRATION

BY

WALTER W. ROACH

The program arranged by the Home Economic Association has covered the subject of school lunches. We realize that, for many years and in many countries, this matter has received careful attention, and probably without adding anything new to the literature I thought it might prove an item of interest to call attention to one group of children in our schools needing special attention (in my judgment) at a particular time of the day, when the school work is most trying, namely—about the middle of the morning session.

I refer to undernourished and retarded children—a group adding materially to the expense account in the upkeep of the educational system.

I can best illustrate the thought by describing conditions in one school of my district—representing many—and how we are trying to meet the



Food Clinic—Wood School, Philadelphia

situation. For want of a better term I will call it a food clinic for the treatment of undernourished retarded children.

This school draws its pupils from a neighborhood inhabited by poor families, largely of Polish, Italian and mixed nationalities, and many hard working Americans. The children are interesting, but an educational problem because many are undernourished. They were all weighed, measured, and physically examined. One hundred and thirteen pupils, about one-third of the school, were found to need better nourishment in order to cope with the school program.

Many of these children come to school with insufficient breakfasts, and some with no breakfasts at all. The clinic was organized in May, and suspended for the summer vacation at the close of the regular school sessions, June 13th, so that the nutriment was administered during a period of four school weeks of five days each.

Purpose of the Clinic and Results. The Compulsory Education Law in Pennsylvania requires children to attend school, sit quiet and endure the strain of study without regard to physical basis or condition of the nervous system.

In healthy normal children this may be all right, but weak undernourished retarded pupils need the stimulation of nutrient properly supplied at the critical morning hour when school consumes the most energy. This stress is added to a normal physiologic strain during the year of elementary school life.

The clinic supplied the fuel to these little human engines at the time most needed, with the result that better mental action followed.

By a fortunate endowment of Nature the young of every species is allowed to frolic and romp, run and play. There is a direct relation between such muscular activity and the satisfactory performance of food materials in their function of building bone and muscle, brain structure and nerve cells. The school restricts the child to muscular inactivity during certain hours, but increases its mental activity.

To supply easily assimilated nutrient in such proportion as to provide the necessary energy for this mental work, at the same time not to complicate the process of excretion, is a basic factor of the food clinic in connection with school work.

The energy which nature stores up in the grains of wheat, oats, corn, rice and other cereals (made available by proper cooking), together with the energy stored in the milk of the cow, appears to be our logical source of supply.

The form of the cereal was changed each day—corn mush one morning; oatmeal the next; rice the next day, with zwiebach and hot milk the next. Thus interesting the children in a change every morning.

Fifty quarts of milk were consumed each day by the 113 children, each child receiving nearly a pint as its quota.

On Mondays rice was prepared by boiling. For each of the other days the cereal was cooked over night in a fireless cooker, securing all the benefits of the slow application of heat with thorough chemical change.

These Wood School children all improved in color, they gained in spirit and activity; were less nervous and not so irritable and carried the air of cordiality from the luncheon tables back to their class-rooms. The fact that they gained in weight a certain number of ounces or pounds from a given amount of cereal and milk in four weeks is not the essential point. They were able to do better work as shown by a comparison of averages before the clinic was started, and week by week as it progressed.

In every comparison the improvement was most marked in the work of the children receiving the nutrient.

The amount of body gain can be given in pounds as follows: Total weight (113 children) before institution of clinic, 6,243 lbs. At end of 4th week, 6,495 $\frac{3}{4}$ lbs.; gain of 252 $\frac{3}{4}$ lbs., or an average 2 $\frac{1}{4}$ lbs.

Judged by the cost of milk and cereal consumed—a seriously low price per pound for human flesh; but the value of the gray matter improvement cannot so readily be estimated in dollars and cents. I might say, however, the per capita cost of education in Philadelphia (exclusive of permanent improvements) is \$36.59 per year per child.

If a pupil fails to make grade much of this is an economic loss. The cost of the supplied nutrient was less than 5 cents per child per day. If ten dollars for a school term of 200 days will make this \$36.59 productive and save a year's time to the child I could write it down an economic gain and feel that the question was removed from the sphere of paternalism.

Unknown to the class-room teachers, the weekly test sheets of the second, third and fourth grade pupils, and the children of the special or ungraded classes attending the food clinic, were carefully studied each week and their markings noted. To save time I will read the result of these scorings for the week preceding the opening of the clinic, and the fourth week of the feeding, as follows:

The averages for the whole school of 350 pupils (including those 113 that were fed) increased from 76.4 to 83.2 in spelling and from 69.0 to 72.0 in arithmetic; that this improvement was due to the beneficial effect of the nutrient administered to one-third of the whole, is shown by the fact that the comparison of the work of the two-thirds of the school not attendants upon the clinic showed very little if any difference and is further shown by these additional facts.

For the same period the averages of the group of pupils of the second grade attending the clinic increased from 71.0 to 87.0 in spelling, and from 59.6 to 71.3 in arithmetic.

The pupils of the third grades attending the clinic increased their group average in spelling from 63.5 to 89.6 and from 61.1 to 81.4 in arithmetic.

The pupils of the fourth grades attending the clinic increased their group average in spelling from 63.5 to 82.9, and in arithmetic from 73.0 to 79.0

I will show this reduced to a table for quick reference by the lantern:

Whole School	Spelling 76.4 to 82.3	Arithmetic 69.0 to 72.0
2nd Grade	71.0 to 87.0	59.6 to 71.3
3rd Grade	83.5 to 89.6	61.1 to 81.4
4th Grade	67.3 to 82.9	58.0 to 68.1
Special Classes	67.7 to 78.2	73.0 to 79.0

This would look as though it *is* an economic question in education, aside from the physical benefit to the child, to administer the proper nutrient to the school children at the time they need it, *i. e.*, about the middle of the morning session.

The details as to weights in relation to the ages of the children and their grade standing I show by the lantern as follows:

NUMBER OF UNDERFED, UNDER-NOURISHED, UNDER-WEIGHT PUPILS BY YEARS OF AGE AND GRADE, WITH TOTAL WEIGHTS, AND AVERAGES OF DEFICIENT WEIGHTS IN POUNDS, MAY 15, 1913.

GRADE	6 to 7 Years	7 to 8 Years	8 to 9 Years	9 to 10 Years	10 to 11 Years	11 to 12 Years	12 to 13 Years	13 to 14 Years	Total
First	10	5	5	..	2	..	2	..	24 (a)
Second .....	..	9	5	3	1	..	5	..	23 (b)
Third .....	..	2	2	4	3	1	3	2	17 (c)
Fourth .....	..	..	1	1	6	1	4	5	18 (d)
Special .....	..	2	3	7	4	4	6	5	31 (e)
Total ...	10	18	16	15	16	6	20	12	113

(a) The total weight of the twenty-four first grade pupils was 1050 pounds, which fell 182 pounds short of that which they should weigh if up to normal development, in relation to their ages and heights.

(b) The total weight of the twenty-three second grade pupils was 1180 pounds, or 167 pounds short of normal for their ages and heights.

(c) The total weight of the seventeen third grade pupils was 995 pounds, or 137 pounds short of normal for their ages and heights.

(d) The total weight of the eighteen fourth grade pupils was 1146 pounds, or 207 pounds short of normal for their ages and heights.

(e) The total weight of the thirty-one pupils of the special classes was 1872 pounds, or 319 pounds short of the normal for their ages and heights.

First grade, 24 pupils, total weight 1050 lbs., 182 lbs. under-weight.

Second " 23 " " " 1180 " 167 " " "

Third " 17 " " " 995 " 137 " " "

Fourth " 18 " " " 1146 " 207 " " "

Specials 31 " " " 1872 " 319 " " "

FIGURE 1

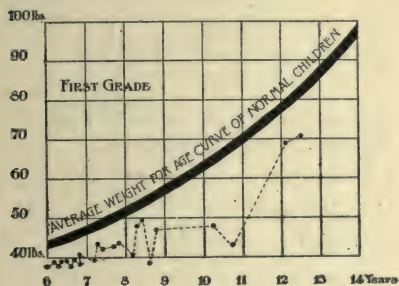


FIGURE 1

6243 1012 lbs. under-weight.

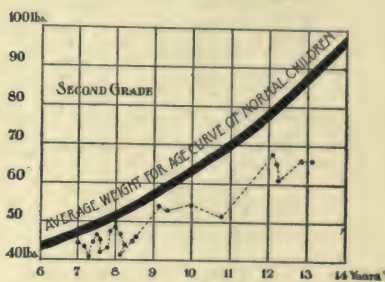


FIGURE 2

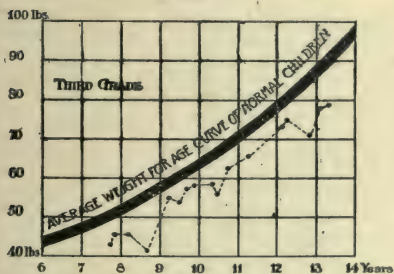


FIGURE 3

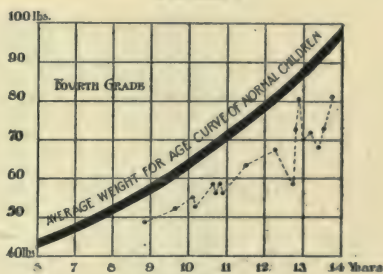


FIGURE 4

Actual weights shown graphically in comparison with normal weights for age

The *ten pupils* between 6 and 7 years of age were 62 pounds under-weight, or an average $6\frac{1}{2}$ pounds per child.

The *eighteen pupils* between 7 and 8 years were 110 pounds under-weight, or an average $6\frac{1}{2}$ pounds per child.

The *sixteen pupils* between 8 and 9 years were 125 pounds under-weight, or an average $7\frac{13}{16}$ pounds per child.

The *fifteen pupils* between 9 and 10 years were 93 pounds under-weight, or an average $6\frac{1}{2}$ pounds per child.

The *sixteen pupils* between 10 and 11 years were 165 pounds under-weight, or an average $10\frac{1}{3}$ pounds per child.

The *six pupils* between 11 and 12 years were 58 pounds under-weight, or an average $9\frac{2}{3}$ pounds per child.

The *twenty pupils* between 12 and 13 years were 235 pounds under-weight, or an average $11\frac{3}{4}$ pounds per child.

The *twelve pupils* of 13 to 14 years were 167 pounds under-weight, or an average 14 pounds per child.

Reducing this to another table for quick reference:—

10 pupils,	6- 7 years,	62 lbs. underweight,	average	$6\frac{1}{3}$ lbs. per pupil
18 "	7- 8 "	110 "	"	$6\frac{1}{3}$ "
16 "	8- 9 "	125 "	"	$7\frac{3}{4}$ "
15 "	9-10 "	93 "	"	$6\frac{1}{3}$ "
16 "	10-11 "	165 "	"	$10\frac{1}{3}$ "
6 "	11-12 "	58 "	"	$9\frac{2}{3}$ "
20 "	12-13 "	235 "	"	$11\frac{3}{4}$ "
12 "	13-14 "	167 "	"	14 "

ANOTHER SLIDE SHOWING THE DISTRIBUTION OF THE GAIN IN BODY WEIGHT
DURING THE FIRST FOUR WEEKS OF FIVE SCHOOL DAYS EACH:

	May 15	June 13
1 James M.....	61.25	62.50 lbs.
2 Jerry C.....	52.25	60.00 "
3 Mary B.....	48.50	48.75 "
4 Tony F.....	54.00	55.25 "
5 Lena B.....	41.00	41.50 "
6 Matilda J.....	50.00	52.75 "
7 James McM.....	48.50	50.75 "
8 Harvey L.....	73.75	74.50 "
9 Charles D.....	49.25	49.75 "
10 Sarah S.....	60.75	61.75 "
11 George S.....	67.00	67.75 "
12 Mary S.....	59.25	60.50 "
13 John S.....	58.25	60.75 "
14 Helen R.....	64.25	65.50 "
15 Annie L.....	69.50	72.75 "
16 Bessie A.....	48.50	49.25 "
17 Annie Z.....	38.00	39.50 "
18 Fannie Z.....	42.50	43.75 "
19 Ida N.....	39.25	39.75 "
20 Anna T.....	42.00	42.50 "
21 Wilfred K.....	36.00	38.50 "
22 Anna S.....	70.50	73.50 "
23 Joseph W.....	42.50	43.50 "
24 Jennie M.....	39.50	39.75 "
25 Barbara W.....	36.00	37.75 "
26 Eleanor L.....	38.50	39.50 "
27 Rebecca S.....	40.00	42.75 "
28 Mary S.....	49.25	51.50 "

	May 15	June 13
29 Robert D.....	56.00	56.75 lbs.
30 Clarence E.....	45.50	46.50 "
31 Fannie B.....	41.50	42.50 "
32 Florence M.....	62.25	63.75 "
33 John R.....	67.00	68.50 "
34 James L.....	44.25	45.75 "
35 Mary W.....	45.50	47.75 "
36 Willie F.....	51.50	53.50 "
37 Annie M.....	45.50	47.50 "
38 Mary N.....	44.00	44.75 "
39 Charles S.....	47.50	48.75 "
40 Arthur M.....	56.00	60.00 "
41 Mitchell G.....	41.50	47.00 "
42 Sarah M.....	67.00	69.25 "
43 Tony T.....	54.50	56.50 "
44 Edward M.....	56.00	58.75 "
45 James C.....	72.00	75.25 "
46 Bertha B.....	58.00	59.25 "
47 Tony W.....	81.00	83.25 "
48 Eva C.....	62.25	64.50 "
49 Florence C.....	48.75	49.75 "
50 Peter R.....	70.00	73.50 "
	<u>2639.50</u>	<u>2750.25 lbs.</u>
Sixty-three others (combined)	3603.50	3745.50 "
	<u>6243.00</u>	<u>6495.75 lbs.</u>



School Nurse Weighing the Children

PRETENDED OCULAR DISEASES IN SCHOOLS

BY

RAPHAEL KAZ

At the Third International Congress on School Hygiene I have reported on real school diseases of the eye. Now I will discuss the imaginary ones, which stop the school occupations in no less a degree than the real diseases, which may lead to true damage of the sight when betimes not recognized, and which are so much the more important as practically one has not yet due regard for them.

There are two ocular affections which principally interrupt the occupations in schools: *trachoma* and *amblyopia*. And yet, one scarcely will find ocular diseases being in like degree simulated by the most harmless or even not existent deviations. It comes also to pass that the imitating trouble is not less serious; but being treated as what it is not, it continues to exercise its pernicious influence on the visual organ as well as on the whole body of the pupil, until the true nature of the affection is occasionally discovered by an oculist.

My observations about the pretended ocular diseases, like those of the real affections, mainly relate to the Petersburg municipal schools and embrace the space of twelve years. From time to time I published the observations in separate papers, which were entitled as follows:

"Pretended Incapacity to Study in Astigmatism" (Russky Vrach, 1903).

"Pretended Amblyopia, Amongst Children" (Russky Vrach, 1904).

"Pretended and Real Incapacity to Read" (Russky Vrach, 1905).

"Vermeintliche Amblyopie, nervöse Asthenopie und Physiologische Hypermetropie im Schulalter" (Klin. Monatsbl. für Augenheilkunde, 1910).

"Das Planglas bei vermeintlicher Amblyopie und nervöser Asthenopie" (Wochenschrift für Therapie und Hygiene des Auges, 1911).

"Pseudoamblyopenlorgnette in der schulärztlichen Praxis und Statistik" (Woch. für Therapie und Hygiene des Auges, 1913).

"Pretended Trachoma" (Russky Vrach, 1913).

All these observations, as well as many other cases from my poly-clinical and private practice will constitute the base for my present considerations.

I. PSEUDO-TRACHOMA.

1. *The Folliculous Catarrh or Folliculosis Simulating Trachoma.*

The resemblance is so great that, as is known, there are "Unitarists" who name folliculosis "trachoma siccum" and make no difference between the folliculous catarrh and the true trachoma. It is the "trachoma" which appears at intense examining studies, shuts the door of the school upon the candidate and then disappears spontaneously—the "trachoma" which disappears with the correction of till then not recognized refractive errors—the same "trachoma" that develops from insufficient illumination of the work-table or from the bad habit of exceedingly approaching the work (Learning Folliculosis). It is also that "trachoma" which comes in the dirt and smoke of the ground-rooms and passes away in the better conditions of the school (Mechanical Folliculosis). It is at last the "trachoma" which is accompanied by phlyctens, blepharitis or eczema of the face and disappears simultaneously with these affections (Constitutional Folliculosis).

On discussing the difference between folliculous catarrh and trachoma A. Dariër says in his excellent Paris lectures(1) "In the practice one will do well, so far as the exciting agent of trachoma is not yet known," to follow the principle that I once have heard from the mouth of Kuhnt: "Therapeutically proceed in the dubious cases as if it be true trachoma, yet in relation to the prognosis, as well as for statistical purposes, the two diseases are to be strictly put asunder"! Although I did not know it to have been of Kuhnt, I was precisely so doing in former times. And when as I remember, how under the influence of the usual cauterizations with the blue pencil the follicles swelled, but not resolved, and instead of disappearing still more increased, how an innocent small-grained eruption transformed in "flourishing trachoma" with abundant granulations on the eyeball, and how in the end one was forced to undertake the surgical cleaning of the grains, which in the beginning of the treatment never was thought of, I come to believe that it would be perhaps much better to do just the opposite of what is recommended by Professor Kuhnt.

Dariër himself however prefers to begin the treatment with mild remedies. "Does," he says, "such a doubtful case not heal in some months under pertinent and energetic treatment (hygienic measures, dropping of acetic plumb), certainly there will be almost always the matter of true trachoma."(2) A cautiousness of that kind is to be warmly greeted; but for a somewhat trusty trial this proceeding cannot pass, as there are remedies much more specifical for folliculosis than the plumb drops. As we learn from the notice published by T. Shabunin

in the Esperanto Medical Journal,(3) above 1,000 cases of "trachoma" were healed by him in one or two months by means of energic cocaine-zation. And in my recent article upon the treatment of trachoma and folliculosis(4) examples are cited from my practice where "trachoma" of long duration, after having been successfully treated not only by plumb drops, but also by prudent application of trachoma remedies and even by repeated outpressions, completely disappeared from the yellow mercurial unguent in some days.

2. *The Epidemic Catarrh Simulating Trachoma.*

Beside the characteristic appearances of the epidemic catarrh—swelling of the fornices, subconjunctival hemorrhages—not seldom eruption of follicles comes to pass. On misleading the physician this pretended trachoma produces the greatest confusion in intelligent families, and only some while after, as together with the swelling of the conjunctiva its grains likewise disappear, it becomes evident that the alarm was a false one. It occurs also inversely: the disease is recognized for an acute conjunctivitis, and afterwards, as the conjunctival swelling decreases, trachomatous grains come to light. Mistakes of that kind are always possible, since the exciting agent of trachoma is unknown(5) and the finding of the Koch-Weeks' bacillus does not exclude the simultaneous existence of trachomatous infection. But there is a means to avoid these mistakes; one ought only not to hasten with the resolute diagnosis, putting it off till the further course of the disease is cleared up. It needs not to wait very long, for from the yellow unguent (with or without cocaine) the epidemic catarrh for the most part disappears in a few days.(6)

3. *The Spring Catarrh Simulating Trachoma.*

The spring catarrh likewise has baffled many a time the most skillful oculists who were treating it as trachoma and certainly but deteriorating by this treatment the condition of the eyes. As is known, the spring catarrh occurs in southern lands; but some cases of it occasionally fly over to us also. This disease, which seems not to be at all contagious and mostly disappears in the colder season in order to reappear in spring or summer, surely prohibited many a pupil from the south to be admitted in schools of northern towns. I observed during some years a young man whose spring catarrh having been never doubted by the oculists of his own town was always recognized for trachoma by the northern oculists; more than once I had to save him with my certificate. Yet, the differentiating between spring catarrh and trachoma is for the most

part by no means a difficult one; it needs only, at the somewhat uncommon picture of trachoma, to have regard for the possibility of such a mistake and not to diagnosticate at first view without having previously asked after the history of the disease. Besides, learnt by the bitter experience, such patients often themselves prevent the physician upon their affection.

II. PSEUDO-AMBLYOPIA.

1. *Normal Sight Simulating Amblyopia.*

In the beginning of my activity at the ophthalmic school dispensary I much doubted over some cases among the pupils of the primary schools, where at absence of any perceptible anomalies on the eyes the vision was considerably lowered, both for the far and the near. A feeble sight without visible cause, the so-called amblyopia, was then to be admitted; and as feeble convex glasses somewhat improved the sight, I had to be contented with the diagnosis "amblyopia ex hypermetropia," although the degree of H was too small for an amblyopic eye. Perhaps, somewhere, I even ordered the same glasses for the interrupted school occupations. But once I occasionally neutralized the glasses by concave ones; supremely satisfied by this combination, the pupil showed unexpectedly an entirely normal vision.

Since I was succeeding to get out the normal vision by simple plane glasses, by the mere test-frame without any glasses and sometimes even by nothing but the energetic invitation to "read higher." Interested by this appearance—which, as I learned afterwards, was already noticed by *Schnabel* (7) and *Peters* (8)—I accurately registered all such cases of simulated or autosuggested amblyopia. So was I able to cite in my first communication about this matter 18 observations, which constituted 3.92 per cent. in relation to the total of children having frequented my dispensary and which presented the interesting fact that there were 16 girls and only 2 boys.

Now I see autosuggested amblyopia to be a common attribute of the primary school. Sometimes amblyopia is autosuggested by the sensation of fatigue on the eyes from working at insufficient illumination, from temporary insufficiency of accommodation at physiological hypermetropia, or generally from closely approaching the eyes to the book; sometimes a slight inflammation of the conjunctiva or an insignificant blow over the eye or else the presence of a foreign body in the conjunctival sac occasion the autosuggestion. Very frequently loss of sight is suggested by complaints of the fellow, whereat mostly the same kind of trouble is imitated, many a time even the same expressions are repeated. Not seldom amblyopia is merely invented—from

the wish to have spectacles like the school comrade or the elder family members. And so it occurs that among a whole group of pupils sent into the dispensary for visual disturbances only one or two or even no one shows any real anomaly of sight.

This appearance seems not yet to be known enough. It is seen from communications on the sight of school children, where numerous cases of "feeble sight without visible causes" are reported, or a vision of 0.2 which becomes normal with a glass of -0.75 D is simply ranged into the rubrick of feeble sight from refractive errors(9). It is seen from school reports where hypotheses are built to explain why the prevalence of subnormal vision amongst girls is more sensible in the primary schools than in the higher ones(10). It is seen from the rather frequent cases in which children pretending loss of sight are a long time atropinized instead of being convicted at once by the plane glass or without any glasses(11). It is also seen from occasional observations where pupils with normal sight wear spectacles reducing their vision in a considerable degree. Not further than a few days ago I had such a case in my dispensary. A boy complained over eye-strain appearances by using his spectacles. They were convex cylinder glasses of 1 D with vertical axis. The examination showed entirely normal vision at emmetropic refraction, while through the spectacles the boy saw but the fifth line. It is obvious that there had been the matter of pretended amblyopia, which was believed by the oculist to be "amblyopia ex astigmatismo." In my first communication on pretended amblyopia there is many a case where I was inclined to do the same.

There is only one condition which may be confounded with the pretended amblyopia. It is the functional amblyopia which occurs in the so-called nervous or neurasthenic asthenopia and which the more resembles the autosuggested amblyopia as it likewise disappears from plane glasses. Here the plane glass, specially that of the slightest grayish or bluish colour, acts not only as a diagnostical tool, but also as a therapeutical one, on showing the too quick exhaustion of the light perspective retinal elements. While pretended amblyopia prevails in the primary schools, the considerably rarer nervous asthenopia occurs mostly in the higher ones (principally at the period of puberty). Functional amblyopia in nervous asthenopia will never yield to a bare frame without glasses nor to the most energetic call to see. Moreover, nervous asthenopia presents two peculiar symptoms—the well-known Förster's phenomenon (narrowing of the visual field during examination) and photophobia with the characteristic folds on the front(12). And yet, there are cases where strict limiting between autosuggested and functional amblyopia is practically almost impossible.

2. *Astigmatism Simulating Amblyopia.*

At present it needs no more to call for discovering and correcting astigmatism amongst children as I did it ten years ago. On using the ophthalmometer of Zaval one is now uncovering rather more astigmatic eyes than they are in reality. One finds 17% of hypermetropia and not less than 37% of astigmatism(13). One comes even to invent a "Bias-tigmatism" and a "Triastigmatism" which prove illusive at critical analysis(14). Thus it perhaps could be spoken, on the contrary, of a Pseudo-Astigmatism. And yet it is by no means a rarity to meet cases where incorrigible amblyopia is stated, while in the fact there is an omitted astigmatism.

In a sketch upon miscarriages in study from visual defects(15) I cite an instructive case of that kind, and in another place(16) I point out, in what conditions such omission may be done. Namely, in cases of complicated astigmatism, especially where the complicating refractive error is of a considerable degree and the astigmatism is contrary to the rule (astigm. perversus), one is contented with the improvement obtained by the spheric glasses and with the diagnosis of amblyopia ex hypermetropia or myopia without attempting to get some more with cylinders. Of course, at systematical examining with Zaval's ophthalmometer such cases would scarcely escape; but apart from the enormous loss of time which would be required by doing so, the determination of only the corneal astigmatism may lead, as was said, to some other mistakes. The skiascopic method still remains the best as well as the simplest one to avoid all such faults. Some turns with a common ophthalmoscope show at once, if there is astigmatism and what is approximately the direction of its axis, while by means of the special skiascope one comes to determine the degree of the error; and if the skiascope is graduated, as it is in my skiascope and ophthalmo-skiascope(17), one sees the degree of the axis also.

3. *Wordblindness Simulating Amblyopia.*

In the sketch just now mentioned there are collected all the cases of congenital wordblindness which were observed by me in the primary schools. On comparing these cases of true alexia optica with those of pseudoalexia from astigmatism I touch also the question of amblyopia, of the real amblyopia in pseudoalexia and the false amblyopia in true alexia. Thereat I reproduce the supremely characteristical writing of the wordblind as a distinctive sign between both these kinds of amblyopia.

Whilst, however, the completely pronounced wordblindness is a rare appearance, the mere feebleness of visual memory, the word-ambly-

opy, if one may say so, occurs by far oftener than it is thought. For such children the act of reading presents a hard labour which they attempt to facilitate by approaching the book to their eyes. The teacher believes them to be feeble-sighted, and the oculist, on finding healthy eyes and normal vision, concludes that there is the bad habit of stooping. But the admonitions to sit straight do not help. By lapse of time insufficiency of convergence and myopia come into play which altogether entangle the picture of the trouble.

Let me tell you a case from the last months of my private practice. The case is highly interesting by showing in the most demonstrative manner, in what a degree the defects of visual memory still are unknown and unmarked in schools, and how the ignorance of these defects may lead to deleterious consequences for the pupil's eyes. It presents at the same time an obvious example, scarcely ceding to the direct laboratory experiment, of the influence of stooping on the development of myopia.

On September, 1911, a girl of 8 years was brought by her father to consult me on account of her incapacity to somewhat long reading. I found folliculosis, beginning myopia and a vision of 0.7 which became normal with -0.5-D . Invited to read the girl approached the book close to her face. At the normal distance she was also able to read, but very slowly. She was the only daughter of seemingly healthy parents, who both had normal sight. One had much labour on teaching her the alphabet and much more so with composing words of syllables, while in all other relations the study was advancing well enough. I gave plumb drops for the folliculosis and advised the most rigorous prohibition of stooping instead of hastening the girl when at reading.

My advice was not fulfilled by the mother who wished as soon as possible to see her daughter being a collegian, and a year after, as her desire was realized, she received from the college the order to consult an oculist about the feeble sight of her daughter. They came again to me. The girl showed a myopia of 2 D and the vision of 0.3 without glasses; she read some better, but always at the nearest distance from the eyes. As with the concave glasses the girl saw nothing in the near, and all the writing on the school table was satisfactorily deciphered by her from the first bench where she was seated, I gave no spectacles, but once more pointed out the danger threatening the girl's sight from such a study. I suggested the mother to explain the matter to the schoolmaster and to beg him for putting off the appreciation of the progress in reading till the latter is gradually learned by the girl.

Five months did not pass from the second visit, as the girl with her father appeared in my consulting-room with an ultimatum of the schoolmaster: either correct the refractive error or give a certificate of the

defective visual memory. The examination discovered a myopia of 3.5 D with insufficiency of convergence. Spectacles were necessary, for now the girl saw nothing on the table, and as the strongest glasses in which she still was able to read were of 1.75 D, I gave her the same together with the certificate of her visual memory.

Conclusions.

1. There are eruptions on the conjunctiva which disappear in a short time either spontaneously or at a mild treatment, yet pass for trachoma, take the shape of trachoma when being treated like the latter and prohibit the admission in schools like the real trachoma.

2. There are scholars who pass for amblyopes, which they are not, and wear spectacles, which are either needless or even injurious to their sight.

3. As for the school statistics, so for the protection of the pupil's eyes the pretended ocular diseases of the scholars are to be as well known as the real ones.

Conclusions.

1. Il y a des éruptions sur la conjonctive qui disparaissent dans peu de temps soit spontanément, soit à un traitement doux, mais passent pour le trachome, prennent l'aspect du trachome en étant traitées pareillement à ce dernier et interdisent l'entrée dans l'école comme le vrai trachome.

2. Il y a des écoliers qui passent pour amblyopes en ne l'étant pas et portent des lunettes qui sont tantôt inutiles, tantôt même nuisibles pour leur vue.

3. Autant pour la statistique scolaire que pour la protection de la vue des écoliers, les maladies oculaires prétendues de ces derniers doivent être connues aussi bien que les vraies affections.

Schlussfolgerungen.

1. Es giebt Ausschläge auf der Bindehaut, die nach kurzer Zeit entweder spontan oder bei milder Behandlung verschwinden, die aber für Trachom gelten, das Aussehen des Trachoms, falls gleich dem letzteren behandelt, annehmen und den Zutritt in Schulen ebenso verhindern wie das wirkliche Trachom.

2. Es giebt Schüler, welche fälschlicherweise für Amblyopen gelten und eine Brille tragen, die entweder annütz oder sogar schädlich für ihre Augen ist.

3. Wie für die Schulstatistik, so ist es auch für die Gesundheitspflege der Augen in den Schulen von grossem Wert, dass die vermeintlichen Augenkrankheiten der Schüler eben so genau wie die wirklichen gekannt werden sollten.

- (1) "Neue Wege und Fiele der augenärztlichen Therapie," Stuttgart, 1910, p. 197.
- (2) Ibidem, p. 198.
- (3) "Kokaino, kiel kuracilo kontrau trahomo," Karacisto, December, 1912.
- (4) "Die gelbe Augensalbe und der Lapisstift bei Folliculosis und Trachom," Woch. für Ther. und Hyg. des Auges, January 9, 1913.
- (5) The great hopes one was lately putting upon the "trachomacorpuscles" (chlamydozoa, intracellular inclusions) of *Provazek* and *Halberstädter* have left us, besides the new undeceiving, a quite peculiar kind of pseudo-trachoma—the so-called Inclusion-Blennorrhoea.
- (6) *R. Kaz.* "Die gelbe Präzipitatsalbe und Lapisbeizungen bei akuter Bindehautentzündung," Klin. Monatsblätter für Augenheilkunde, 1912.
- (7) "Ueber Sehstörung durch Suggestion bei Kindern," Prager med. Wochenschrift, 1894.
- (8) "Ueber autosuggestierte Myopie bei Schulkindern," Zeitschrift für Augenheilkunde, 1899.
- (9) Russky Vratsh, 1909, p. 1359.
- (10) Russky Vratsh; 1913, p. 133.
- (11) *R. Kaz.* "Ueber Atropinbehandlung bei Refraktions—bestimmungen," Woch. für Therapie u. Hygiene des Auges, 1911.
- (12) *R. Kaz.* "Headaches and Spectacles in Nervous Asthenopia," Russky Vratsh, 1908.
- (13) International Magazine of School Hygiene, VIII (1912), p. 353.
- (14) Wochenschr. f. Ther. u. Hygiene des Auges, XVI (1912-13), p. 87 and 121.
- (15) "Les Insuccès dans l'Etude par Défauts visuels," 3e édition. Ostende, Bureau internat. de documentation éducative, 1913.
- (16) "Astigmatismus, Wortblindheit und funktionelle sehstörungen als ursachen der fehlerhaften Haltung bei Schulbeschäftigungen," Woch. für Ther. u. Hyg. des Auges, 1912.
- (17) The Ophthalmoskopiascope together with my Light reservoir and Pseudo-amblyoscope constitute the "Pocket-Set for Ophthalmic School Inspection," which will be shown at the Scientific Exhibit of the Congress.

THE SCOPE OF MEDICAL SCHOOL INSPECTION IN BUFFALO

BY

ARTHUR C. SCHAEFER

At the inception of medical school inspection in Buffalo, inspection was limited to the children of the public schools, but it soon became apparent that any system of inspection to be effective must include all children of school age, never ignoring the fact that medical school inspection is, and must of necessity, be part of child hygiene. That being the case, medical school inspection is an inspection or supervision of the children of school age.

In Buffalo, the Bureau of Child Hygiene is under the Department of Health. The discussion as to whether it should be under the Educational or Health Department, to my mind, is purely a community question and after all, as long as the results are accomplished, what does it matter under whose direction it may be?

The relations between the Buffalo Health and Educational Departments have been most cordial as well as coöperative, every one striving for the same ultimate results with such vim and devotion as is manifested only by co-workers realizing their obligations toward their fellow citizens of a great commonwealth.

At present, medical school inspection embraces six general subdivisions:

- I. Prevention of Communicable Diseases.
- II. Detection and Removal of Physical Defects.
- III. Child Psycho-Physiology.
- IV. Instruction in Hygiene.
- V. Sanitary Conditions of the School Buildings and Environments.
- VI. School Nurse and Social Work.

Almost all systems of medical school inspection had their inception in the fact that vital statistics presented the incontrovertible evidence of a material increase of communicable diseases during the school term; although many causes may be assigned for this condition, we must admit that the closer contact in which children are brought during the school term is an important factor. The State requires compulsory

education and the State obligates itself to see that during the school term, the children are protected. It is a great moral responsibility and we feel as though too much cannot be done.

All children having communicable diseases are excluded as well as all contacts and suspicious cases, until it is determined that it is safe for their return, in fact, the prevention of communicable diseases has made such strides, that at the present time the school is a safe place, as far as these diseases are concerned.

II. *Detection and Removal of Physical Defects.* A healthy body is a prerequisite to a healthy mind and from a purely economical viewpoint, it is important that all physical defects of school children should be detected and as many removed as possible. With the detection and removal of physical defects, we were confronted with numerous other problems, to wit, we find anemia. What is its cause? What are the causes of malnutrition? What produces adenoids, hypertrophied tonsils, glandular enlargement? Are they due to disturbance of the lymphatic circulation due to sedentary life? What is the relation of the school to the various neuroses? What relation has the school curriculum to the psychosis? None of these have been fully answered. We have collected much data but we must use it in a scientific and systematic manner.

III. *Child Psycho-Physiology.* This is a word coined by us for our convenience. It includes the care of all subnormal children, physical or mental, or both. The work of our school inspectors for the past five years has laid increasing emphasis on the needs of those pupils who are unable to keep pace with their school fellows.

At the request of the Department, special investigations have been made in order to ascertain the causes of their retardation, while many factors, such as adverse conditions in the home, truancy, frequent transfers from school to school, working out of school hours, etc., have contributed to the production of "repeaters." It has been found in the last analysis that a considerable number of our pupils are held back by a simple lack of ability, either physical or mental, to do the regular work of the school. Children who have been handicapped by physical defects have, in numerous instances, received medical or surgical relief upon the recommendation of the school inspectors and have enjoyed a corresponding improvement in their capacity for intellectual development. In contrast with these cases, our inspectors have observed a small minority of repeaters whose mental defects quite overshadow any other abnormalities that they may possess, and who are making little or no progress in school because of a deficiency which neither the ordinary school system nor the physician can wholly supply.

In this way, the problem of the mentally defective child has been forced upon us and is recognized by this Department as one of the principal concerns of the Bureau of Child Hygiene. We are now interested in obtaining a complete census of such children as well as other pertinent facts in view of their disposition as well as future mitigation.

IV. *Instruction in Hygiene.* We realize that the children of to-day will be the parents, legislators, judges, etc., of tomorrow, and the possession of a healthy body, both personal and politic, is essential to the welfare of the nation. We believe the more lasting and effective results of medical school inspection as well as of all sanitation can best be accomplished by making a course of instruction in the same a part of the school curriculum. Just how extensive, we have not decided, but at present the medical school inspectors give special instructions in personal hygiene as well as in elementary public sanitation. The expansion and proper application of this phase of medical school inspection is under consideration.

V. *Sanitary Conditions of the School Buildings and Environment.* Every inspector is responsible for the sanitary conditions of the school buildings and their environments within his district. At present, we have little voice in the plans or specifications of new buildings. This, fortunately, has not proved disastrous but we believe we should have some voice regarding the plans and specifications of all school construction.

VI. *School Nurse and Social Work.* The importance of this work cannot be overestimated. The necessity of social workers is acknowledged; who is better fitted for the work than the school nurse? When the medical school inspector discovers a case of scabies and recommends treatment, how much has been accomplished? Does not this mean a nest of scabies at home? One case of rickets is usually a symptom of more rachitic forces at home. A case of malnutrition, what is the cause? Is it hygiene? Is it poverty? This work must be done, and for economic reasons the nurse is the person to do it. She, from her training, can discover sanitary and economic defects as well as many contagious diseases and physical defects. In this way, the medical school inspector can obtain information which will be of a material aid to him in his work.

This at present is our plan of medical school inspection, and with the judicious expansion of these general subdivisions, with the concerted action of the two great forces, the Department of Education and the Department of Health, I believe we will fulfill some of our obligations to our fellow citizens.

THE HEALTH OFFICER AND THE RURAL SCHOOL

BY

FRANK OVERTON

The local health officer is the sanitary expert in rural communities. He may not seem to be an expert when he is compared with the experts of the health departments of the larger cities, but he certainly is an expert sanitarian compared with the local teachers, or the ministers, or even his local medical associates. It will be interesting to get his point of view concerning the relation of the public school to public sanitation.

The laws of nearly all of the states require that hygiene and sanitation must be taught in every public school. The health officer cares less for methods of teaching than he does for results. He puts less stress upon intellectual gymnastics than upon the sanitary conditions of the school buildings and pupils. He realizes that pupils will be likely to forget their classroom instruction after examination time, but will remember the physical arrangements that are made for their comfort and health.

A local health officer has to contend with public indifference and ignorance. He has no all-powerful board of health to respond instantly to his call, as the city health officer has. The country health officer must create public sentiment. He has a right to expect results from the school instruction that has been imparted through all the years that the laws have been in effect. What he really finds is that the ideas of sanitation prevalent among all classes of people in the country are those of a generation ago. One reason for this ignorance of modern sanitation is that the sanitary conditions in ordinary country schools belie the teachings of the classrooms. Of what use, for example, is instruction regarding the dangers of common drinking cups when only one cup is provided for a whole roomful of pupils?

The opportunities for practical instruction in sanitation are greater in rural schools than in the schools of large cities. In the cities the sanitary arrangements are controlled by the janitors and teachers. The sewage disposal works act automatically, and in concealment; the water supply comes from hidden pipes, and ventilation and heating are entirely beyond the control of the pupil, and often of the teachers. On the other hand, all these operations are under the direct observation and control of both teachers and pupils in country schools. The sanitary apparatus constitutes a laboratory equipment that is in constant action before the eyes of all the pupils. Rural schools would, there-

fore, offer exceptional facilities for the teaching of sanitation, if the school authorities would equip the school as the health officer would furnish it.

One of the first things that will engage the attention of a health officer inspecting a school is its sewage disposal plant. Every school has such a plant, even though it is only a building measuring 3 x 3 feet. In these days, when the dangers of water pollution, and of fly-carried diseases is known, it is reasonable to expect that the school should provide an object lesson in an up-to-date and efficient water closet that is dry, odorless, and fly-free. If the health officer were to choose between the example of simple effective water closet and an elaborate course of classroom instruction in sewage disposal, he would expect more definite sanitary, hygienic, and healthful results from the closet than from the classroom work. The closet deeply impresses every pupil several times a day. The classroom work in sewage disposal half-way impresses him for two or three quarter-hour periods. The cost of a sanitary closet is very little more than the cost of an ordinary one. Would it not be a great thing if a health officer could tell an ignorant man to go and look at the school closet, and to build one like it?

A second thing that the health officer will inspect is the water supply. He would inquire as to its source; whether or not the pump or well is placed for mere convenience, or with regard to the purity of the water. He would also inquire as to the distribution of the water to the pupils. Is a common drinking cup in use, or is there a sanitary fountain with running water or are individual paper cups provided? The cost of either a fountain or individual cups will be small and within the means of the poorest district. The health officer will at least demand that each child has his own drinking cup.

A third thing that the health officer will inspect is the method of ventilation. Of course, this will usually be by means of windows. If the health officer is a practical man, he will look at the top sash to see if it can be lowered. If it can, he will know that the room can be properly ventilated with ease. If it cannot be lowered, he will know that the room cannot be ventilated without great care and difficulty. The installation of frames that allow the upper sashes to be dropped is inexpensive, but it will be an object lesson that every pupil will remember when he grows up and designs his own house.

Another thing that the health officer will inspect is the heating plant. The popular idea is that the heating plant is the all-important part of schoolroom hygiene. In reality, it is only a small part. The temperature of the air, if it is within half-way reasonable limits, plays a minor part in healthfulness. Foul air, dirty water, and unsanitary closets are the real causes of the ills whose causes are referred to the heating plant.

A heating plant that combines ventilation with heating is fine, but the difficulty is that such a plant must be adjusted only to ventilating the room on a cold day when the fire is hot. No method of ventilation is automatic. Even the most automatic and elaborate system of ventilation requires constant attention. It is well that a rural school should follow the same system of heating and ventilation that the child must follow in his home, and that every pupil sees how to ventilate by means of windows.

A sure test for the purity of air is its smell. This is a test that every ignorant child can apply. The health officer will insist that an unpleasant or stuffy odor in the air of any inhabited room that is entered from out-of-doors is a sure sign that that air is impure. A health officer inspecting a school in session will order the windows opened, if he finds the air stuffy and odoriferous. The gist of the subject of ventilation is to maintain the air free from odor.

If a health officer should inspect a school, he would have something to say about the medical inspection of the school children, and of the teacher, too. The popular idea is that a school is one of the worst of all disseminators of contagious diseases. Suppose a few cases of scarlet fever break out in a town. At once a cry goes up to close the school. There are great advantages in keeping the school open during an epidemic. First, an open school affords a means of keeping a record of each child, and of detecting a beginning indisposition; second, the child comes to school far cleaner than he would be if he stayed at home, and third, the child is far more orderly and well behaved than he would be at home or on the street. The point is that there is far less likelihood of spreading contagion when children are kept orderly under sanitary conditions, than when they run wild and uncontrolled.

The surest rule for the detection of contagious diseases is to consider every case of a common cold as a possible case of scarlet fever, or measles, or diphtheria. Every cold and tonsilitis is contagious no matter what its form or severity may be. Many a mild cold is really diphtheria, or scarlet fever, or measles. Therefore, exclude from school every child that has a cold. Is this a hardship? Not at all. It must be done before contagious diseases will be fully controlled.

Mary had a little cold,
She caught it in her head,
And everywhere that Mary went
That cold was sure to spread.

It followed her to school one day,
There wasn't any rule,
It made the children cough and sneeze
To have that cold in school.

The teacher tried to turn it out,
She tried hard, but—ker-choo!
It didn't do a bit of good,
For teacher caught it too.

But teacher would have done a lot of good if she had turned Mary out at her first sneeze.

The idea of the superior healthfulness of rural communities as compared with cities is becoming untrue. The causes of the unhealthfulness of the city are becoming known and remedied. Furthermore, cities are engaged not merely in preventing unhealthfulness, they also actively promote healthfulness. Rural communities are doing neither. The death rate of New York City has been progressively lowered, and in 1912 it was actually lower in the city than in the rest of the State. The death rate in the country districts is remaining stationary, while it is being lowered in the cities. The legislature of New York State has recently passed a law conferring on rural health officers some of the powers granted to the board of health of New York City. Two new laws make medical inspection of all school children mandatory, either by health officers, or by other physicians. This inspection will do much to aid the health officer in his general work, and will doubtless result in a greatly decreased death rate in rural communities.

Progress in hygiene and sanitation must begin in the school and with school children. It must be along lines that appeal to the local health officers.

SKIN DISEASES IN SCHOOL CHILDREN

BY

EDWARD PISKO

Not having read the transactions of the three previous Congresses, I do not know whether the subject I am about to submit to you has been called to your attention heretofore; but whether it has or not, the subject is of sufficient importance to be urged repeatedly, with the hope that it may result in action.

Great progress has been made in school hygiene by improved school buildings. Millions upon millions are being spent to make the buildings look inspiring. The public has at last realized the importance of developing the child physically, and most schools have been fitted with gymnasiums. But the most important of all, the danger from diseases of the skin in children, and from the speed with which they are transmitted to others has been overlooked. A great many mothers are as ignorant to-day of the great dangers underlying and resulting from skin eruptions and diseases, as they were a century ago. But we cannot blame the mothers when some of the city authorities, men of education and high standing, display no greater knowledge.

How many realize the great injury to the physical well-being of the child in the common contagious diseases known as scabies, pediculosis, ringworm, etc? Do they know that in the absence of proper and scientific treatment, the parasites multiply by the millions and that it is transmitted to other children with greater speed than many diseases for which there exists public horror? Let alone the loss of school time by the child and the consequent increase of school work forced on it upon its return, in most cases beyond the child's capacity.

And yet, excepting the institution at Randall's Island, with which I am connected, where 1,700 children with skin diseases are treated and cared for by competent physicians and nurses while they attend special classes, the nearest approach towards minimizing the danger to our children at school from contagious diseases of the skin, is the superficial examination of the children by some incompetent and inexperienced physician who gets a salary equal to about one-half that of a bricklayer.

It is mostly only in advanced stages that the various skin diseases are discovered by these young physicians and the cases are then sent to public skin clinics, where not enough time can be given to the treatment in the hour or two that the skin clinics are open, and where, because of the commonness of the diseases, they are treated with no special care by the physician or his assistants in charge.

I do not say this in condemnation of the physician in charge of the clinics, but I am speaking of actual existing facts based upon my experience of over twenty-five years in public skin clinics of New York. Undoubtedly another cause for the lack of care in the clinics is the fact that the physicians receive no compensation or return of any kind, a condition which is unfair to the children as to the physicians, and I advocate their proper compensation.

It is not enough for the child to receive a hasty examination in the clinic and then be sent home with a prescription, and in that way merely change the place of infection from the school to the home and the neighbors' children. There should be specially trained nurses, in charge of districts, who should visit the households, study the family conditions, execute and administer the treatment prescribed, and supervise the sanitary conditions of the home. Only in that way will the spreading and infection be reduced to a minimum.

There are mothers' clubs, women's protective leagues, social committees, and all sorts of women's societies; but here is a large field which for real public good, all of the other societies together pale into insignificance.

A very common appearance in the clinics is the "sore arm," resulting from bad vaccination. I only mention this casually, to indicate the chaotic conditions existing. A young physician gets an order to vaccinate fifty or sixty children. The report must be returned within the given time of a few hours. What happens? The physician administers the vaccine and hands in the report. His interest is not the children but the report. No care was taken in the preparation of the children for the vaccination; and injections were made as though the children were to develop into horses rather our future citizens. The infectious arm keeps the child out of school from three to five weeks, during which time it runs around in the streets, associates with all kinds of degenerates, and has its morals and habits demoralized.

As an illustration, some four years ago a boy of twelve was sent to my clinic, at the Harlem Hospital, with a ringworm of the scalp. Being barred from school for months, he joined the army of our famous younger and older corner loafers. Sometime thereafter he returned complaining that he is hardly able to walk. On examination, the anal region was found studded with large, moist papules, an eruption covering the whole trunk and the initial lesion of syphilis about two inches within the rectum. The boy confessed that a gang in the neighborhood abused him and a number of other boys in the same way. I succeeded in getting hold of another similar case of a boy of twelve, who was home from school on account of scarlet fever in his family, and presented both cases before the Manhattan Dermatological Society at the March (1909) meeting.

I do not criticise the Board of Health. I condemn those who will cut the budgets for schools and hospitals in favor of civic cepters. We are not prepared for a civic center until we show civic pride in the development of our future citizens.

The physicians in the police and fire departments are paid well and forbidden to engage in private practice; why not the same in the Board of Health? Make their number of physicians adequate. Let their salaries be commensurate with their ability. Let efficiency be the standard. To permit a young and inexperienced physician to do school work by spending a few hours at school in blissful ignorance, is not only a farce but an unpardonable crime towards our future generation.

It is a well-known fact that outside of the infantile eczema, especially intertrigo in the folds of the neck, the anal and the genito-crural region, almost two-thirds of the skin diseases, including the acute infectious diseases, the eruptive fevers, such as chicken-pox, measles and scarlet fever, are seen in school children; naturally so, because of their contagiousness and the easy facilities of spreading.

The three greatest enemies of school children are pediculosis, scabies, trichophytosis; all three highly contagious, and rapidly spreading at the house and in the school. It is not within the scope of this paper to give the clinical picture and pathology of these diseases, but I want to outline a very practicable and inexpensive treatment and an effective cure. While it is almost immaterial which of the anti-parasitic remedies are used, it is essential *how* they are used, and I have therefore advocated the institution of district nurses. It is not enough to smear the sulphur ointment in a case of scabies; no such patient will be cured, and the whole family will get it. The preparatory bath in a tub of hot water and the use of a scrubbing brush with a lot of soap must cleanse the body first, all underwear and bed linen must be washed and boiled. In pediculosis, the best and safest is the old standby, kerosene. It kills the lice and nits, but it must be done correctly. In spite of the offensive odor, the head must be washed with it repeatedly and kept covered, no sores will occur, and within a week or so the children will be able to go to school again. In ringworm, X-ray is the ideal treatment, but if not available the scalp must be shaved every week, and a strong anti-parasite paste, preferably an ointment of red-oxide of mercury should be applied. But above all a competent nurse is most essential.

I am using the plainest of English so as to be understood by everybody, as I consider it of vital importance for the future generation. Every taxpayer should be advised of the conditions and dangers and he should protest against the cutting of the budget in the direction outlined. In this way the standard of the school hygiene will be raised.

I hope that this paper is brought to the attention of the proper

authorities, and if it only awakens some interest its mission will be fulfilled.

Here is a large field not only for the fathers of school children but also for those who are members of this Congress and have the interest of real school hygiene at heart.

Let us not forget for one moment that the future citizen is formed in our public schools, and that it is not enough to teach them hygiene as a subject, but real practical hygiene, in order to enable them to take care of themselves, and thus become strong and healthy men and women. Prevent the school from being the nursing grounds of disease. No expense in this direction should be spared. Any innovation, if good and practicable, should be applied and installed at once.

Sanitary perfection is the only safeguard against all communicable diseases and epidemics.

Mens sana in corpore sano.

STANDARDIZATION OF PHYSICAL EXAMINATIONS

BY

WILLIAM J. GALLIVAN

The first complete physical examination of school children in Boston was made during the school year 1911-1912 and defects detected were recorded on a card which appears to be in pretty general use.

The wide variation in defects recorded in children living in the same locality, but attending different schools, and subject to the examination by different physicians immediately became a subject of comment and of subsequent investigation. One physician reported 106 cases of defective palate out of a total school attendance of 1,256 children. The total number of defective palates reported by the complete staff of school physicians, 87 in number, were 371, out of a total school population of 120,000 children.

In a boys' school in a certain locality, 139 cases of defective teeth out of a total school attendance of 2,530 were reported; and in a girls' school in the same district, attended by the girls of the same families whose boys attended the school just mentioned, but examined by a different physician, there were reported 1,692 cases of defective teeth, out of a total school attendance of 2,269.

And so down the list the wide variation of defects reported suggested causes other than careless method of examination.

Investigation revealed that each school physician had a separate standard. In some instances, primary defective teeth were not recorded as defects. Teeth showing fillings were recorded as defective by a certain number of examining physicians. So it became evident that in order to secure more uniformity in diagnosis a standard should be set and with this purpose in mind, the following revised physical examination card has been substituted for the card formerly in use and a circular in syllabus form defining methods of making a diagnosis under each heading has been sent to each physician:

CITY OF BOSTON
HEALTH DEPARTMENT
 DIVISION OF CHILD HYGIENE
MEDICAL INSPECTION OF SCHOOLS

NAME		ADDRESS															
SCHOOL	AGE	DATE															
	PRIMARY	GRAMMAR								HIGH							
	K	I	II	III	IV	UN	V	UN	VI	UN	VII	VIII	I	II	III	IV	
Mental Deficiency																	
Defective Nasal Breathing	}	Ant.															
		Post															
Hypertrophied Tonsils																	
Defective Teeth	}	Primary															
		Secondary															
Defective Palate																	
Cervical Glands																	
Pulmonary Disease	}	Tb.															
		Non-Tb.															
Cardiac Disease	}	Organic															
		Functional															
Nervous Disease	}	Organic															
		Functional															
Chorea																	
Orthopedic Defects	}	Tb.															
		Non-Tb.															
Skin																	
Rickets																	
Malnutrition																	
SCHOOL ATTENDED 1912-1913																	

Posterior. Only instrumentation allowed is the use of a wooden tongue depressor—a separate one for each pupil. Adenoids will cause the velum to stand away from the posterior pharyngeal wall and the pressure of this growth behind the velum prevents the reflexes of this region, which are normally present, upon depressing the tongue.

Hypertrophied Tonsils. The normal distance between tonsils is about $1\frac{1}{2}$ inches. Any appreciable encroachment on this space by enlarged tonsils would warrant the diagnosis of hypertrophied tonsils.

Defective Teeth:

Primary. Dental caries is the only defect to be noted under this classification. Missing primary teeth will not be recorded as a defect.

Secondary. Dental caries, malocclusion and missing teeth are the common defects. Teeth properly filled will not be recorded as defective.

Defective Palate. Cleft palate, bifurcated uvula, double uvula and elongated uvula are the only defects to be considered.

Cervical Glands. Glands of the neck, easily palpable, will be recorded under this heading.

Pulmonary Disease:

Tuberculous. A stethoscope must be used. Diagnosis must be made without recourse to sputum examination, X-ray examination, or tuberculin tests.

Non-tuberculous. Important to differentiate from tuberculous type.

Cardiac Disease:

Organic. Stethoscope must be used. History of previous illness is an important factor. The location of the apex beat and the size of the heart are important points. Murmurs alone do not mean organic heart disease.

Functional. Important to differentiate from organic heart disease.

Nervous Disease:

Organic. The diagnosis of organic nervous diseases will be made in all cases of paralysis, such as obstetrical paralysis, post-diphtheritic paralysis and the paralysis resulting from acute anterior poliomyelitis. Epilepsy will be recorded under organic nervous disease.

Functional. Functional nervous disease will cover those cases

which are due to temperament and do not present any pathological lesion.

Chorea. Chorea has been considered of sufficient importance to be placed as a separate defect. A history of the case from the class-room teacher will be a great help in diagnosing the mild cases.

Orthopedic Defects:

Tuberculous. The most common forms are tuberculosis of the spine; (Potts disease) knee; (tumor albus) hip; (tarsal, carpal, phalangeal) shoulder, elbow and sacro-iliac joints.

Non-tuberculous. Under this classification record as defective cases of arthritis, flat foot, club foot, lateral curvature, round shoulders and similar deformities due to faulty attitude.

Skin. Only the dermatoses are to be considered in recording skin defects. The reportable communicable exanthemata will not be recorded under the classification. Do not record pediculosis as a skin defect. Abrasions and contusions do not come under this heading. The more usual types of skin disease seen in children are favus, tinea, eczema, seborrhœa, impetigo, acne, herpes and scabies.

Rickets. In children of school age, only the resulting bone deformities are found. Epiphyseal enlargements, the rosary, pigeon breast, knock-knee and bow legs are types of rachitic deformity.

Malnutrition. Children suffering from poor nutrition are under-sized under weight and anaemic. Improper food, as well as insufficient food, are important factors.

The method of examining eyes and ears has not been discussed, because in Massachusetts school teachers are required by statute to test for defective vision and defective hearing. Duplication of this work by the school physician would be contrary to all the laws of conservation.

The defects here enumerated seem sufficient to cover the cases which experience shows are common in school children and are unrecognized by the parent until their sequelae appear in the form of serious illness. Under a sane system of Medical Inspection of Schools, the finer diagnosis which can be made only by specialists, ought not to be attempted. In the vast majority of cases, such diagnosis will not be necessary. The ends and aims of medical inspection will be served by provisional diagnosis and by referring the case to the family physician or to medical charity. The limitations suggested under each heading will insure a greater uniformity in the record of defects and statistics based upon such reports will be of more value.

JALONES O INDICACIONES RUDIMENTARIAS PARA LA INSPECCIÓN MÉDICA DE LAS ESCUELAS EN LOS ESTADOS POBRES

POR

MIGUEL R. SOBERON

Muy atinada la recomendación de aportar al Congreso el producto de la experiencia personal sobre la higiene de las escuelas, en breves líneas, cúmpleme decir que en el Estado de San Luis Potosí hay una Inspección General de Salubridad Pública, desde hace más de 20 años, que ha contado entre sus atribuciones la vigilancia médica de las escuelas.

Para efectuar ésta ha hecho hacer visitas a los locales para cuidar de su mejor ventilación, aseo y condiciones sanitarias, fijando su atención en excusados, perchas y aprovisionamiento de aguas. Lo mismo en la Capital que fuera de ella ha hecho visitas y ha rendido informes al Gobierno, solicitando mejoras. A los directores de instrucción primaria, normal y superior los ha estado estimulando para propagar los ejercicios físicos, los baños; y la higiene cerebral, evitando la sobrecarga de trabajo intelectual. De cuando en cuando ha enviado instrucciones sobre tiempo de aislamiento en las afecciones transmisibles, enfermedades reinantes, su manera de propagación, su profilaxis y aun medidas curativas (en especial a las escuelas foráneas).

Ha dado conferencias con su personal médico farmacéutico sobre vulgarización de higiene: siendo sus temas predilectos higiene en general y limpieza personal, tuberculosis, agua, alcoholismo, enfermedades eruptivas de los niños, higiene escolar y vacuna antivariólica. Para mejorar la propagación de ésta en todo el Estado ha solicitado de los maestros su concurso para la vacunación antivariólica jeneriana, encargándose el médico conservador de la linfa, de enseñar a los maestros el manual operatorio.

Apenas ha tenido noticia de la menor queja se ha cerciorado de su justificación y ha puesto los remedios conducentes: ya escuelas donde ha habido enfermitos transmisibles de enfermedades eruptivas (pocos casos), ya de tiña, ya enfermos adultos de la familia del maestro o el mismo maestro o maestra, atacados de tifo o tuberculosis, &c. En tales circunstancias ha hecho cerrar las escuelas, ha dado los datos para el aislamiento y ha practicado la desinfección. Ha emitido su opinión sobre el moviliario escolar moderno adquirido en las escuelas superiores,

sobre la adaptación de locales a escuelas &., rechazando por ejemplo, el baño de inmersión colectivo, dándole preferencia al de regadera, prefiriendo el excusado de taza acanalada descubierta, colectivo con golpe de agua intermitente, al común inglés de habitación difícil de conservar, y sujeto a frecuentes descomposturas, &.

El Gobierno tuvo por largos años, hace como 10, un inspector médico oculista de las escuelas, el Sr. Dr. D. Antonio F. Alonso.

En medio de sus múltiples atribuciones la Inspección General no descuidó la vigilancia médica higiénica de las escuelas, sino que procuró dedicarle la mayor atención.

Pero el natural adelanto exigía una inspección médica escolar especial. Entonces propuse al Gobierno que se creara, sin hacer grandes gastos, aprovechando la vigilancia y dirección general de la Inspección de Salubridad, la atención especial de cada médico vecino a cada escuela. Toda escuela sería visitada siquiera dos veces al mes gratuitamente, puel médias recaint quien haría las debidas indicaciones. Además sería preguntado aporósito de cada caso imprevisto en su consulta gratuita de su casa. Acomodando para conseguir el fin último, en beneficio de los niños, los reglamentos y documentos de la Capital de la República a esta organización especial. Pero no lo conseguí.

Entonces surgió un caso de estudio que creo digno de ser tomado en consideración como asunto netamente práctico. En un Estado pobre, donde no es posible hacer las cosas según un programa ideal, se quiere empezar a establecer un sistema de inspección médico-escolar. Y se me comisiona para presentar un proyecto. Hay que empezar transformando el antiguo puesto de Inspector oculista de las escuelas en Inspector médico general de las escuelas, para que haga más amplia su labor con todo lo que se relaciona a la higiene escolar.

Son cuarenta las escuelas públicas del Gobierno que estarán bajo su vigilancia, más las superiores, también del Gobierno, como es natural.

La concurrencia es alrededor de 7808 alumnos. No es posible por ahora conseguir un médico por cada seis escuelas como sería debido. Es injusto exigir a un sólo médico una labor completa. Pedrá hacer la visita ebdomedaria y nomás, seleccionando los maestros mismos aquellos niños que juzguen enfermos o anormales, según su entender y de acuerdo con las instrucciones que por escrito, de palabra o por conferencias hayan recibido del Inspector médico, quien de esa manera tendrá una tarea posible, apoyada por los maestros.

Naturalmente que hará las observaciones de conjunto sobre posición al escribir y leer, sabrá el género de juegos y gimnasia que acostumbren, vigilará el aprovisionamiento de agua, la luz, los pisos, muebles, útiles, caracteres de la letra, & & y muy principalmente la higiene cerebral para evitar el "surmenage."

En la vigilancia de los locales, agua, enfermedades transmisibles, &c., estará apoyado por la Inspección General de Salubridad Pública del Estado, cuyos agentes y médicos recabarán datos en su oportunidad y al desempeñar sus comisiones de higiene general.

Pero nunca a un solo médico Inspector de Escuelas se le podrá exigir la ficha escolar de tantos miles de niños, es decir, el examen individual, llenando el documento correspondiente.

Para conseguirla me permití indicar que los profesores de Higiene, que deben ser médicos, en las escuelas normales, de varones una, de Señoritas otra, pueden adiestrar a los alumnos, que son alrededor de 215 entre hombres y mujeres, 32 alumnos de higiene, en el uso de los aparatos Dufestel, toracómetro y patrón automicriptores que posee el Estado, para que ellos sean quienes se turnen, como vía de práctica, para tomar la ficha escolar, con propio beneficio suyo inmediato, futuro del profesorado y grande ayuda del médico Inspector; así como la agudéz visual y auditiva y los documentos que el Inspector señale.

Esto es, que donde la necesidad impida que el médico Inspector pueda practicar todos los reconocimientos de los escolares según lo piden las exigencias de la Higiene moderna, aquel puede apoyarse en el trabajo de los profesores y normalistas, para ayudar su labor en todas las cosas que sean compatibles con dichos profesores.

El profesor complementando la labor del médico higienista.

THE HYGIENE OF THE JANITOR

BY

HOMER H. SEERLEY

The Janitor. The sanitation of the schoolhouse depends upon the school board, the teachers and the janitor. The janitor is the servant of the public and as such should be diligent in so conducting his part of the business as to conserve the welfare of the pupils. At the same time, the janitor is helpless in his endeavors unless he is granted the coöperation and the sympathy of the school board and the teachers. Certain preliminaries in construction, in environment, in appreciation of service and in knowledge of the values of sanitation are essential to give the janitor a reasonable chance for success. Without these necessary conditions the janitor can not maintain satisfactory standards and will gradually lose his disposition to seek improvement and develop excellence in all kinds of cleanliness. It is necessary to recognize that the school board, the teachers and the pupils must be obedient to the laws of school hygiene and must enforce all the important characteristics of sanitary science before the janitor can begin to render the service that his employment intends to secure.

The Environment. There must be a sanitary environment for every schoolhouse before there can be a permanence of sanitary conditions in the building itself. Paving, permanent walks, the grassing of the yard, the making it possible for the pupils to be able to enter the schoolhouse with actually clean shoes, is the service assigned the school board. Many schoolhouses are so unfortunately located, the streets and the highways approaching them are in such an unfavorable condition as to cleanliness, that it is impossible to pass over the same and enter the schoolhouse without producing unhygienic conditions. When the numbers of pupils that thus enter are considered, it must be realized that the environment must be continually in perfect condition as to cleanliness before the janitor's service can comply with the minimum standards that hygienic principles demand.

The Housekeeping. The work of the janitor consists of the task of keeping the building immaculately clean. This means that dust must be constantly removed from the walls, the floors and the furniture of the building in its every part. Prevention is always easier than cleaning. Keeping the dirt out of the building is of more helpful importance than removing it after it is in. The problem of the janitor is more a problem

of not having it to deal with rather than a problem of the machinery for relieving the trouble after it has existence. Housekeeping includes the cleaning of blackboards, the cleaning of floors and the removal of everything that should not exist under sanitary regulations. Sweeping with brooms is not to be commended as a complete process of securing hygienic conditions as thereby dust is developed and scattered everywhere to the detriment of all concerned. Therefore methods should be adopted that suppress the stirring of the dust that gets into a room and yet enables what is found to be there to be removed without undue complications and evils. Possibly the vacuum systems of cleaning are great improvements on other methods in existence but it is not likely that this system can be universally adopted. Besides the vacuum systems are unable to remove much dirt that adheres to the floor, walls and furniture. This being the case it is necessary to use water for cleaning purposes as it is an agency that has no substitute for the service it can perform. Hence wiping floors and furniture and even walls as frequently as necessity may require and that with clean water and a woolen cloth for a mop gives the most permanent hygienic results. Clean water is better than soapy water or any equivalent preparation because it leaves no residue and gives a wholesome effect upon the atmosphere of the room being cleaned. The only use that a broom or brush can serve that is worthy of commendation is that of a preliminary agent to take up the coarser particles which may have been dropped on the floor by the pupils, as the wiping with water is the final dependence in completing the work necessary to be done. Whenever this method has been consistently followed by providing a suitable environment, by making satisfactory arrangements and by systematically cleaning with water, the best hygienic results have been attained.

The People. It is well known that the educated and the trained representatives of the people do not yet acknowledge and believe that the principles of school hygiene are worth the while. Even the scholar is not necessarily a hygienist to any remarkable extent. Intelligence and cleanliness do not necessarily go together. Regard for knowledge and regard for health are not associated factors in civilization. As a consequence, churches, public buildings, private homes, hotels and restaurants are generally the most flagrant violators of the simplest laws of hygiene. This being so, it is very difficult to get the public attention to the necessities of school hygiene since the janitor does not receive the support or the impression that a hygienic schoolhouse requires and an indifferent public encourages him to be careless, indolent and even unfavorable. It is possible that laws requiring suitable standards will be of some benefit, it is possible that earnest and interested teachers

can be of much influence, but after all a higher degree of intelligence and of appreciation for scientific results must be brought to the consciences of the masses of the people. To-day the states are sending out expert representatives to help the masses of the people to a better kind of agriculture, to a better success in animal industry, to the making of more wealth and prosperity in business, but when it comes to human health, human happiness physically, human progress in caring for human life but few such experts are employed and but little instruction is given while but little worry is taken. Hog cholera is therefore treated as of more immediate importance than human tuberculosis; corn and cattle are dealt with as deserving more national and state attention than the care and culture of children, and as a consequence human life and happiness seem to be left to individual initiative and individual action rather than to be important and essential things for the nation and state to grant supreme place in study and in action.

SESSION TWENTY-THREE

Room E.

Saturday, August 30th, 9:00 A.M.

SCHOOL NURSES AND SCHOOL CLINICS

E. H. LEWINSKI-CORWIN, Ph.D., *Chairman*

MISS BERTHA M. GIBBONS, R.N., Buffalo, N. Y., *Vice-Chairman*

Program of Session Twenty-three

E. H. LEWINSKI-CORWIN, Ph.D., Executive Secretary of the Public Health Hospital and Budget Committee of the New York Academy of Medicine, Executive Secretary of the Associated Out-Patient Clinics, New York City. "The Practical Necessity of School Clinics."

WILLIAM J. GALLIVAN, M.D., Chief Division of Child Hygiene, Department of Health, Boston, Mass. "School Clinics."

DR. ERNST JESSEN, Strassburg, Germany, Chairman Hygienic Commission of the International Dental Federation. "The Uniform Treatment of Children in the Dental Clinics of All Countries." Read by Dr. Herbert Wheeler.

E. B. SMITH, M.D., Detroit, Mich. "First Aid to the School Child."

EDNA L. FOLEY, B.L., R.N., Vice-President of the National Organization for Public Health Nursing. "The Place of the School Nurse in the Public School System." Read by Ella Phillips Crandall.

ROSE O'HARE, Chief School Nurse Department of Health, Buffalo, N. Y. "School Nurse and Her Work." (Manuscript not supplied.)

ELLA PHILLIPS CRANDALL, R.N., Executive Secretary National Organization for Public Health Nursing. "The Educational Preparation of the Nurse for School Nursing."

LINA L. ROGERS, R.N., Superintendent of School Nurses, Toronto, Canada. "Work of the School Nurse in Toronto."

JOSEPHINE DURKEE, R.N., Rochester Public Health Association. "The Relation of Visiting Nurses in Small Communities to the Public School."

Paper Presented in Absentia in Session Twenty-Three

(Read by Title)

HELEN L. PEARSE, Public Health Department, London County Council.
"The Growth of School Nursing Under the London Education Authority."

THE PRACTICAL NECESSITY OF SCHOOL CLINICS

BY

E. H. LEWINSKI-CORWIN

Efficiency was defined by one of our great American engineers as "the relation between *what is* and *what ought to be*." Judging by this standard and agreeing on the premise that one hundred per cent. of efficiency in medical school inspection means a complete discovery of all of the ailments and defects of the children followed by a prompt, rigorous and effective alleviation and cure of them, so far as they can be alleviated or cured, we must admit, in the light of established facts, that we have not only failed to reach the uppermost notch of efficiency but that we are quite a good distance away from it. I shall not attempt to reproduce here the tables of statistics showing the number of defects noted in the schools of this and other countries and the corresponding statistics of treatments and results of treatments. They are in a general way known to all of us. In New York City in 1911, for instance, 166,368 children were found to be needing treatment, of whom 65,150—or not fully 40%—were reported as treated. We don't know how many of the defects noted were actually remedied as there is, of course, a difference between reported treatment and actual cure. A single visit to a dispensary is considered as treatment and there is no law whereby the Health Department of the city can enforce further action, even if in its opinion the treatment is inadequate. Nor is such a law desirable. We are evidently not accomplishing fully what we we have set out to do. There is a serious gap between our aim and its fulfillment.

Efficiency depends almost wholly on the application of certain broad general principles. When our work proves to be falling short of efficiency we must either change our methods of procedure or revise the underlying principles governing them, or both. One of the principles of medical inspection of school children is to point out defects, leaving it to those most interested in the welfare of the children to have them attended to and treated—a perfectly reasonable expectation which, however, like many other social theories and assumptions is, unfortunately, not being borne out by actual facts.

Many parents are ignorant, many negligent and indifferent, many are overworked and indigent. Campaigns of education and social reform will undoubtedly decrease the numbers of the ignorant and the indigent, but this is a slow process. If our faith in school medical inspection is justifiable and if we really mean to decrease the appallingly large

amount of illness and physical discomforts among school children and conserve their health, thus promoting well being and sound education, we must recognize that our underlying principles must be altered and actual conditions met more satisfactorily than by mere observation and noticing of defects.

Medical inspection of school children is in its infancy. Before a satisfactory method will be worked out many experiments must be tried out and many careful inquiries made. The present fragmentary study was undertaken on behalf of the Public Health, Hospital and Budget Committee of the New York Academy of Medicine to demonstrate a method of testing the value of certain elements entering into the effectiveness of our medical school work, in order to determine whether school clinics are a practical necessity. As you are probably aware, matters pertaining to the health of the school children of the City of New York are confided to the care of a dual authority—that of the Department of Education and the Department of Health. The sanitary care of schools, the instruction in physical training and personal hygiene, the segregation of backward and mentally defective children, are entrusted to the Department of Education; all the other elements of the medical school inspection are under the control of the Department of Health.

There are instances where the work of the two departments overlaps; there are instances where the two departments collide. There are opportunities for mutual dissatisfaction and irritation which at times engender ill-feeling and refusal to coöperate on the part of individuals. We shall eventually come to the point it seems to me, when we shall have to decide on some definite policy of procedure, which will eliminate any possibility of friction. We should like, therefore, to know precisely to what extent the full and complete coöperation of the teaching staff with the medical corps is to be counted on as a factor in bringing the efficiency of our school medical work to the highest possible pitch. Then, we have a great many dispensaries in the City of New York, varying in size and efficiency. The knowledge of the extent to which the proximity of a large and well equipped dispensary affects our problem, is also essential before a definite policy is adopted. Thirdly, we harbor within our city limits population composed of various races, of various degrees of intelligence and education and differing in economic status. We should like to know to what extent these factors enter into our problem.

Recognizing the importance of these elements, we have selected four schools in the Borough of Manhattan: One on the lower east side in a section whose population is composed almost entirely of Russian, Austrian and other Jews, and where the coöperation of the school author-

ities with the health officers is known to be excellent. Then, another school amidst a mixed population, foreign to a great extent, where the interest of the principal in the work of the Health Department's officials was known to be slight. A third school was selected, again in a Jewish quarter, but in another section of the city, near a large and efficient dispensary, and a fourth school in a representative well-to-do district of the city. It was impossible for us to go over the cards for all the children of those four schools, so we decided to take as many cards as we could get for one class of each grade of the schools in question endeavoring in this way to bring into the study children of all ages in each school. In all we have examined 1,452 records. From these closed records for the first term of 1912-1913* we have tabulated the number of children suffering from physical defects, but have not included cases of contagious diseases or communicable diseases of the eye and skin, as they are being treated in schools, so that our inquiry referred only to cases of defective vision, defective hearing, defective teeth, primary and permanent; defective nasal breathing; enlarged tonsils; defective nutrition; cardiac, nervous and pulmonary diseases, and orthopedic defects.

There were 1,617 cases of these defects alone noted for the 1,452 children whose records were examined. Bad teeth constituted two-thirds of the defects. While the per cent. of all the defective children found among those investigated in the four schools, exclusive of bad teeth, was 41, it varied from school to school. It was 40% on the lower east side, 54% on the east side in the neighborhood of 30th Street, 21% in the well-to-do uptown district, and 50% on the upper east side near 103rd Street. Of all the defects, bad teeth were most poorly attended to. In the school in the foreign district of the city where coöperation of the school with the medical corps was very good, 90% of the cases of defective permanent teeth were treated but none of the 147 children with carious milk teeth received any treatment. In the school where coöperation was poor, 28% of cases with defective permanent teeth were treated and no primary teeth defects were reported remedied. In the school in the well-to-do section of the city, 56% of cases of bad permanent teeth were treated and 17% of bad primary teeth. For the school near the dispensary, 35% of bad permanent teeth is reported as treated, and out of the 239 cases of primary bad teeth only 1 is reported as having been treated. As to other defects the coöperating school reported 94% of children with defects receiving treatment as against 65% for the school whose attitude was antagonistic to the Department of Health. The well-to-do section school reported 80% of its defective children

*In the case of School No. 171, the cards for the year 1911-1912 were used, because the records for the first term of 1912-1913 were unsatisfactory.

under treatment, and the school near the dispensary reported 86% under treatment. If the teeth defects be counted in, then the per cent. of treatments for all the defects, other than communicable eye and skin diseases, will respectively be: 47%, 32%, 54% and 41%. As to individual defects, the following table shows the per cent. of treatment in the cases of four chief classes of defects:

TABLE No. 1

	Defective Vision	Defective Nasal Breathing	Enlarged Tonsils	Teeth	
				Primary	Permanent
SCHOOL A: Lower East Side. Good coöperation.	75%	100%	95%	....	90%
SCHOOL B: Neighborhood of 30th St. and 2nd Avenue. Bad coöperation.....	55%	63%	70%	....	28%
SCHOOL C: Up-town well-to-do district.....	90%	91%	80%	17%	56%
SCHOOL D: Upper East Side, near a dispensary...	85%	95%	82%	4%	35%

The numbers of other defects are too small to be of use for comparative purposes. The table shows that eye troubles receive treatment in 55 to 90 per cent. of cases and that adenoids and tonsils are attended to in from 63 to 100 per cent. of cases. Evidently special stress, at times too much stress, is being laid on this class of defects. It is instructive to note that at times with full coöperation of the school authorities it is possible to attain 100% of treatments in certain classes of ailments. Teeth present the poorest showing as to amount of attention and treatment given, even in the well-to-do section of the city.

As has been already mentioned, reported treatment and actual results should be regarded as two distinct statistical categories. Under existing conditions, figures of treatments should be taken with great reservation as an indication of efficiency of results attained by medical inspection of school children. The school health records indicate the number of cases which in the opinion of the school doctor were cured or which improved under the reported treatment. Tabulating these statistics, I find as far as the cases are reported that, exclusive of teeth, out of 482 cases treated only 204, or 42.3%, have been cured, and 96 cases, or 20%, have improved. The remaining 37% are not recorded

as cured or improved. Granting that among the defective children under treatment there was a number of incurable cases, and allowing for clerical errors of omission, 38 or 30 or even 25% of non-cures and non-improvements in school children is a very high percentage. Aside from mere figures, experience shows that a large percentage of those reported treated do not improve, a condition which calls for serious consideration and which is due in a large measure to slipshod therapeutics in dispensaries as well as by some private physicians, especially in the poorer sections of the city.

Contrary to the prevailing notion of the abuse of dispensaries by patients able to afford a physician's fee, the statistics for the four schools as to source of treatment, show that 235 of the 482 cases treated for defects other than teeth went to consult physicians and only 228 made use of dispensaries. The remaining 19 are not accounted for.

TABLE No. 2

TABLE INDICATING PLACE OF TREATMENT OF DEFECTS OTHER THAN TEETH AS REPORTED ON SCHOOL CARDS.

SCHOOL	Total Number of Cases Treated	Treated by Physicians	Treated in Dispensaries
SCHOOL A: Lower East Side.....	104	47	56
SCHOOL B: Neighborhood of 30th St. and 2nd Avenue.....	88	41	45
SCHOOL C: Uptown well-to-do district.....	94	54	31
SCHOOL D: Upper East Side....	196	93	96
Totals	482	235	228

The same to a much greater degree is true of dental work. 156 private dentists were consulted as against 40 in the clinics. It is a remarkable showing, considering that three of the four schools are in the poor sections of the city. The conditions can be ascribed to the following three causes: (1) Parents do not want to pauperize their children in taking them to free dispensaries; (2) people have not strong faith in the effectiveness of dispensary treatment; and (3) the hours of the dispensaries are in many instances not suited to the convenience of the children, and, furthermore, going to a dispensary, under the present condition of overcrowding, entails long hours of waiting.

TABLE No. 3

TABLE INDICATING PLACE OF TREATMENT OF DEFECTIVE TEETH AS REPORTED ON SCHOOL CARDS.

SCHOOL	Total Number of Cases Treated	Treated by Dentists	Treated in Dispensaries
SCHOOL A: Lower East Side....	90	75	8
SCHOOL B: Neighborhood of 30th St. and 2nd Avenue	24	11	13
SCHOOL C: Uptown well-to-do district.....	75	48	3
SCHOOL D: Upper East Side....	39	22	16
Totals.....	228	156	40

All of the figures quoted in this inquiry must, of course, be taken with many grains of salt. The element of negligence and error on the part of the physicians and nurses making out the records must be taken into consideration. Then, the four schools selected out of a total of 513 public schools of the city of New York may not reflect prevailing conditions adequately. These considerations lead one to insist on the importance of a similar study on a large and comprehensive scale where the element of error would be minimized and the conditions in a majority of schools in all parts of the greater city analyzed. Meanwhile, the present fragmentary study tends to indicate: First, that although the difference in the economic and educational status of the various classes of the population is a factor to be reckoned with in adopting measures leading to efficiency of medical inspection of school children, yet the average percentage of defects treated in children of parents in better circumstances and of an average higher level of education is not materially different, if at times not smaller, than in children of the poorer sections of the city. In this connection it must be noted that the per cent. of children with defects, other than teeth, was much lower in the well-to-do section than in any of the three other sections; second, that full and harmonious coöperation between the teaching staff and the medical corps is an element of extreme import in the efficacy of the work. In some instances, especially in cases of defects with reference to which a great deal of popular education has been undertaken, it is evidently possible to attain one hundred per cent. of treatments when the coöperation of the principal and teachers is genuine and wholehearted;

third, that the proximity to the school of a well-equipped and efficient dispensary tends to increase the usefulness and efficiency of the work of the medical school inspectors; fourth, that in the case of children's ailments parents, even of the poorer classes, resort in fifty per cent. of cases to the services of private physicians; fifth, that over thirty per cent of reported treatments of school children by private physicians and dispensaries do not result in cure or improvement; and sixth, that teeth are of all the largest and most neglected class of children's defects.

Should a comprehensive study on the lines suggested in this paper bear out the above cited conclusions a thorough revision of the underlying theory and methods of our medical school inspection should be undertaken and serious attention given to the institution and organization of school clinics where efficient, competent and prompt work would be done.

School clinics are being tried in various parts of the country and abroad. In New York City we have dental, nose and throat, and contagious eye disease clinics for children, maintained by the Department of Health. The number of these clinics is small and their location is not planned to meet the peculiar needs of certain sections. The only therapeutic work done in schools of New York City is by nurses who treat minor skin and eye troubles like scabies, ringworm, favus, impetigo and conjunctivitis. This measure alone has decreased the number of school exclusions from 57,665 children in 1903 to 3,361 in 1911, but what is more important than mere school attendance, it has effected positive cure in thousands of cases.

It is my personal opinion and belief that school clinics, if adopted on a broader scale, should be established if not in every school, then in schools centrally located so that children from other schools in the vicinity could easily reach them. The clinic districts should not be made too large, that the evils of overcrowding may be avoided and the children not subjected to waiting long and many hours. The treatment in school clinics for those who need it and are unable for one reason or another to secure the services of conscientious practitioners should be given not as a gratuity but as a legitimate part of the functions of the school just as physical training or baths or recreation.

There will, no doubt, be opposition to them at first. We attempted once to enucleate tonsils in schools and we had street riots in the Italian section of the city. There will be other sources of opposition. Every new experiment or departure from established routine is bound to invite opposition, but as the clinics demonstrate their usefulness and efficiency, the opposition to them will gradually wane away.

A number of sources has been suggested to secure the means necessary for the maintenance and operation of such clinics: Budgetary

provisions by the municipality, special assessments, voluntary per capita contributions of a couple of cents weekly by the parents of the children and, finally, the establishment of branches in school buildings by dispensaries caring to reach out. Each of these suggestions has its merits, but the last two may prove impractical. A system of collecting small contributions is cumbersome and costly, and establishing of children's clinics in schools by dispensaries is not very probable; furthermore, the extension of the field of the gratuitous service of the physician is impractical and unjust. Physicians must be paid for their work and paid adequately. If the establishment of school clinics proves to be a public need, then, not one class or classes but the community as a whole must defray the expense of their maintenance and operation.

APPENDIX (I)

SCHOOL A:
Lower East Side.

No. 1

Number of cards investigated, 252.

Coöperation, Good.

DEFECTS	Number of Defects Noted		Number of Children Treated		Reported Treatment by	
	Total	Per cent. of total number of children of the school included in the investigation	Total	Per cent. of those reported as defective	Physicians	Dispensaries
Defective vision.....	20	7 %	15	75%	13	1
Pulmonary diseases.....	..	....	..	..	..	..
Nervous diseases.....	1	.4%	1	100%	..	1
Orthopedic defects.....	1	.4%	1	100%	..	1
Enlarged tonsils.....	43	17 %	41	95%	15	26
Defective nutrition.....	14	6 %	14	100%	7	7
Cardiac diseases.....	1	.4%	1	100%	1	..
Defective nasal breathing	31	12 %	31	100%	11	20
Defective hearing.....	..	....%	..	...%	..	..
Total.....	111	40 %	104	94%	47	56

DEFECTIVE TEETH

Primary teeth.....	147	54 %	..	..%	..	..
Permanent teeth.....	99	39 %	90	90%	75	8
	357		194	54%		

APPENDIX (I)

No. 2

SCHOOL B: .

Number of Cards investigated, 250.

East Side, neighborhood of 30th St. and 2nd Ave.

Coöperation, Poor.

DEFECTS	Number of Defects Noted		Number of Children Treated		Reported Treatment by	
	Total	Per cent. of total number of children of the school included in the investigation	Total	Per cent. of those reported as defective	Physicians	Dispensaries
Defective vision.....	29	11 %	16	55%	5	9
Pulmonary diseases.....	..	....	..	....	..	..
Nervous diseases.....	1	.4%	1	100%	1	..
Orthopedic defects.....	1	.4%	..	...	..	..
Enlarged tonsils.....	67	27 %	47	70%	19	28
Defective nutrition.....	3	1 %	3	100%	2	1
Cardiac diseases.....	3	1 %	2	66%	2	..
Defective nasal breathing	27	10 %	17	63%	10	7
Defective hearing.....	5	2 %	2	40%	2	..
Total.....	136	54 %	88	65%	41	45

DEFECTIVE TEETH

Primary teeth.....	131	52 %	..	...	..	..
Permanent teeth.....	85	34 %	24	28%	11	13
	352		112	32%		

APPENDIX (I)

No. 3

SCHOOL C:

No. of Cards investigated, 502.

Upper West Side.

Coöperation, _____

DEFECTS	Number of Defects Noted		Number of Children Treated		Reported Treatment by	
	Total	Per cent. of total number of children of the school included in the investigation	Total	Per cent. of those reported as defective	Physicians	Dispensaries
Defective vision.....	43	8 %	39	90%	21	17
Pulmonary diseases.....	..	..	..	..	..	..
Nervous diseases.....	1	.1 %	1	100%	1	..
Orthopedic defects.....	..	..	..	..	..	..
Enlarged tonsils.....	46	9 %	38	80%	31	7
Defective nutrition.....	2	.4 %	2	100%	..	1
Cardiac diseases.....	2	.4 %	2	100%	1	1
Defective nasal breathing	12	2 %	11	91%	..	5
Defective hearing.....	1	2 %	1	100%	..	1
Total.....	107	21 %	83	80%	54	31

DEFECTIVE TEETH

Primary teeth.....	137	27 %	24	17%	24	..
Permanent teeth.....	89	17 %	51	56%	48	3
	333		158	47%		

APPENDIX (I)

No. 4

SCHOOL D:

Number of Cards investigated, 448

Upper East Side.

Coöperation, _____

DEFECTS	Number of Defects Noted		Number of Children Treated		Reported Treatment by	
	Total	Per cent. of total number of children of the school included in the investigation	Total	Per cent. of those reported as defective	Physicians	Dispensaries
Defective vision.....	47	10 %	41	85 %	25	12
Pulmonary diseases.....	..	....	..	....	..	..
Nervous diseases.....	2	.4%	1	50 %	..	1
Orthopedic defects.....	4	.9%	2	50 %	2	..
Enlarged tonsils.....	68	15 %	56	82 %	21	35
Defective nutrition.....	11	2 %	10	90 %	5	5
Cardiac diseases.....	11	2 %	5	45 %	5	..
Defective nasal breathing	82	18 %	78	95 %	33	43
Defective hearing.....	3	.6%	3	100 %	2	..
Total.....	228	50.1%	196	85.9%	93	96

DEFECTIVE TEETH

Primary teeth.....	239	53 %	1	.4%	..	..
Permanent teeth.....	108	24 %	38	35 %	22	16
	575		235	41 %		

APPENDIX (II)

DEFECTS	SCHOOL A Lower East Side	SCHOOL B Middle East Side	SCHOOL C Upper West Side	SCHOOL D Upper East Side
DEFECTIVE VISION:				
Treated.....	15	16	39	41
Cured.....	5	3	11	1
Improved.....	4	6	17	11
PULMONARY DISEASES:				
Treated.....	..	..	..	..
Cured.....	..	..	..	..
Improved.....	..	..	..	..
NERVOUS DISEASES:				
Treated.....	1	..	1	1
Cured.....	..	..	..	..
Improved.....	1	..	1	1
CARDIAC DISEASES:				
Treated.....	1	2	2	5
Cured.....	..	..	..	4
Improved.....	..	1	..	1
DEFECTS OF NASAL BREATHING:				
Treated.....	31	17	11	78
Cured.....	10	2	5	74
Improved.....	2	9	1	..
ORTHOPEDIC DEFECTS:				
Treated.....	1	..	..	2
Cured.....	..	..	..	1
Improved.....	1	..	..	1
ENLARGED TONSILS:				
Treated.....	41	47	38	56
Cured.....	14	4	11	48
Improved.....	5	19	4	1
DEFECTIVE NUTRITION:				
Treated.....	14	3	2	10
Cured.....	2	1	..	8
Improved.....	6	..	1	1
DEFECTIVE HEARING:				
Treated.....	..	2	1	3
Cured.....	..	..	..	..
Improved.....	..	2	..	..

SCHOOL CLINICS

BY

WILLIAM J. GALLIVAN

By the term School Clinic is understood the maintenance of clinics in school buildings for the correction of physical defects detected in school children.

The argument, implied or otherwise, for the establishment of clinics in school buildings is the lack of responsibility, moral or financial, on the part of parents, to properly care for their offspring.

Dental clinics are already under way. And by the same process of reasoning, clinics for the treatment of adenoids, pathological tonsils, lateral curvature, and other physical defects ought soon to follow. Already, one extremist, to use a polite phrase, has made a plea in writing, for compulsory dentistry. And so the possibilities of the school clinic lead us to activities we dare not contemplate.

The necessity for such invasion of school buildings does not seem to me to be warranted by any conditions now existing among school children. True, statistics show that a large percentage of school children present physical defects. True, these defects should be corrected, so that the child might grow to a sturdy manhood. But until it can be shown that parents have lost all sense of parental love and responsibility, the present custom practiced in Boston of having all defects corrected either by the family physician or dentist or at some medical charity seems best.

Although Boston was the first city in the country to institute medical inspection of schools, no attempt until the present year was made to find out how many defects were corrected by parental initiative, after they had been notified of such defects by the school physician.

The following table showing percentages of corrections made in one year was compiled at the Central Office and is based on the examination of 120,000 school children. The pupils' Physical Examination Record Card for the school year 1912-1913 was compared with the record of the school year 1911-1912 and the following are the results:

Mental deficiency.....	26%
Defective nasal breathing.....	54%
Hypertrophied tonsils.....	43%
Defective teeth.....	25%
Defective palate.....	70%
Cervical glands.....	45%

PULMONARY	Tuberculous	50%
DISEASE	Non-tuberculous	50%
Cardiac disease		54%
Nervous disease		65%
ORTHOPEDIC	Tuberculous	16%
DEFECTS	Non-tuberculous	45%
Skin		74%
Rickets		75%
Malnutrition		66%

Allowing for possible errors in diagnosis, difference in opinion between school physicians and the family physician and for defects which are non-remediable, the result is most gratifying. It is the result of one year's systematic work of notifying parents of defects and if followed up by nurse's visit to the home, would show a still greater percentage of defects corrected.

Under a more satisfactory system of medical inspection of schools, with physicians and nurses working under one authority, and that authority the Health Department, it is confidently predicted that all remediable defects can be corrected without any more legislation than exists at present and without establishing hospitals in the school buildings.

The writer's only experience with school clinics occurred upon assuming his present work. Boston's situation is unfortunate. There, the school physician is under the Board of Health and the school nurse is under the authority of the School Committee. School clinics were maintained by the school nurse. Abdominal pain was treated by the nurse and such patients kept in the school building regardless of parents' ability to care for such cases. Rows of children appeared before the nurse to have fingers dressed, verrucae removed and other ills administered to wholly without the knowledge and consent of responsible parents. Such treatment of a possible appendix, under the fostering care of school authorities, makes one stand aghast. The practice has been abandoned.

No one who has followed legislative hearings on medical matters can fail to be alarmed at the recommendations for changes in existing health laws. Staid old Massachusetts has let down the bars on vaccination unwisely, we think. Other changes in well-planned health laws are being agitated and the attitude of the advocates of the school clinic, compulsory dentistry, and other measures is pointed to as the attitude of all medical men.

DIE EINHEIMLICHE BEHANDLUNG IN DEN SCHULZAHNKLINIKEN ALLER LÄNDER

6 THESEN VON

ERNST JESSEN

1) Es ist zu erstreben, dass die heranwachsenden Kinder schon von 2½ Jahren an in halbjährlichen Zwischenräumen zur Untersuchung in die Schulzahnklinik gebracht werden, damit die Milchzähne gefüllt werden können, ehe sie Schmerzen, und damit die Kinder mit gesundem Mund in die Volksschule eintreten.

2) Es ist zu erstreben, dass jedes Kind mit 2½ Jahren seine eigene Zahnbürste erhält und dieselbe täglich morgens und abends gebrauchen lernt, damit die Zahnpflege dem Volke schon von früher Kindheit an vertraut wird.

3) Der Mund derjenigen Kinder, welche sich im späteren Alter in der Schulzahnklinik einfinden, ist möglichst konservativ zu behandeln. Kariöse Zähne, die nicht mehr gefüllt werden können, als Fäulnisherde aber schädlich wirken, müssen entfernt werden. Trockene Milchzahnwurzeln sollen im Interesse des Kieferwachstums stehn bleiben, bis die nachfolgenden Zähne in die Erscheinung treten. Die zerfallenen Kronenreihen sind in solchen Fällen abzuwickeln und die Wurzeln glatt zu schleifen, aber nicht zu entfernen.

4) Die Sechsjahrmolaren sind bis zum 12. Jahre möglichst konservativ zu behandeln und erst dann zu entfernen, wenn sie sehr defekt sind oder wenn Platzmangel eintritt.

5) Unter allen Umständen und in jedem Falle muss das Vertrauen der Kinder geweckt werden. Kinder, welche sich sträuben und welche sich nicht behandeln lassen wollen, sollen nicht gezwungen werden, müssen aber freundlich aufgenommen werden, sobald sie wiederkommen.

Kauvermögen, Zahnwechsel und Allgemeinbefinden sind bei jeder Behandlung zu berücksichtigen.

6) Jede Behandlung muss individuell durchgeführt werden, sie muss sich nach dem Alter, der Constitution und dem Charakter des Kindes richten.

THE UNIFORM TREATMENT OF CHILDREN IN THE DENTAL CLINICS OF ALL COUNTRIES

6 THESES BY

ERNST JESSEN

(Read by Dr. Herbert L. Wheeler of New York.)

1. It is desirable that children beginning at $2\frac{1}{2}$ years be brought semi-annually to the clinic, in order that decaying milk-teeth be filled before they ache, and that the children enter school with a sound set of teeth.

2. It is desirable that every child from $2\frac{1}{2}$ years on possess a tooth brush and learn to use the same every morning and evening, in order that thus dental hygiene may be gradually introduced among the people.

3. The mouths of those children who come to the school dental clinic at a more advanced age are to be treated so as to preserve as many teeth as possible. Decayed teeth which can no longer be filled, and which are harmful seats of putrefaction must be extracted. Dead roots of milk-teeth should be left in position until their successors appear, in order to assist in the development of the jaws. The broken remains of the crowns of such teeth should be removed, the roots ground smooth but not extracted as long as they are firm.

4. The sixth-year molars should be, as far as possible, preserved; at the 12th year some will need to be extracted because they are very defective or because there is a lack of space.

5. At each examination and treatment the confidence of the child should be gained and maintained. Nervous children who will not freely allow treatment should not be forced, but should be brought back when they are in the right mood. At each treatment the ability to masticate, the shedding of the teeth, and the general health of the child should be considered.

6. Each treatment must be individual, it must be adapted to the age, the constitution, and the character of the child. The above propositions should be the guiding principles for the uniform treatment of the children in the school dental clinics of all countries.

FIRST AID TO THE SCHOOL CHILD

BY

E. B. SMITH

It does seem that our present school curriculum, with its ever-increasing fads, uses up too much of the child's study time in mere recitation and leaves too little time at his disposal for the practical application of his knowledge or for the study of his own body and the means of protecting it. It is my contention that a child's knowledge of himself is one of the greatest factors in his formation of habits of right thinking and consequently of good citizenship. The children of to-day are the stake in the battle for the normal working men and women of to-morrow. We know that the institutions and asylums for the feeble-minded are increasing and that the number of inmates is rapidly multiplying. This is the result of injuries as well as of sickness. It becomes our duty to stem the tide.

Education is of little use to one, who is rendered unable by physical defect from an accident or other cause to use his knowledge. Half of the working population of this country is inefficient to a degree of 10% on account of sickness, and 5% on account of some injury. An army of 15,000,000 people is sick one day each year. Those of us who are studying economics will see that this is an annual loss of \$50,000,000 to the country, and this without taking into consideration the fact that the working life is shortened. Prussia has demonstrated whereby the expectation of life in that country has been advanced a decade.

The tendency to-day in all advanced communities is to care for the sick and give first aid to the injured; to place back as soon as possible each working unit, and to make that unit as normal as the science of medicine and surgery is able. This is done by the outlay of time, energy and large expenditures of money. Aside from the humanitarian standpoint, this pays. Give the little ones some means by which they can protect themselves. Six lectures a year during the last two years in our public schools, and six in our high schools, would give the child a working knowledge of anatomy, physiology, bacteriology, and first aid, that would be a lasting benefit to him. A considerable amount of this knowledge would be talked over at home, and the parents become interested.

The health boards are doing a work giving the people instruction in preventive medicine and first aid in accidents; for example, how to care for such injuries as occur on our Fourth of July. The clergy are doing good evangelistic work along this line. The press is doing an educa-

tional work. The nurses are blazing the way for the public in their daily work. The teachers are taking up the study of anatomy, physiology, bacteriology and preventive medicine, and are aiding the good work. The medical and surgical profession must impart knowledge. They are now visiting the schools in almost every community and could easily do the teaching. Nothing is so interesting to the adult as the knowledge of his personal and physical make-up—to know himself. The child is just as susceptible, when you talk to him and teach him of himself, and go into detail as to how to take care of and protect himself, as is the adult. This is the out-cropping of the first law of nature—"Self-protection."

To make it possible for the child to understand first aid, the thing that was so dear to the heart of our country woman, Clara Barton, it is necessary to give to him through competent authorities four to six lectures a year. The first lecture should be on bones and muscles, showing by picture the human skeleton, and describing the bones, their composition, how they are held together by muscles, ligaments and tendons, how they protect important organs and how locomotion takes place. Then take up the muscular system, telling how it is the active agent of locomotion, and that it is divided into two systems: One, the striped under the control of the will, the voluntary muscles; and the other, the involuntary, not under control of the will, and called non-striped.

The second lecture should be on the heart, arteries and veins. The heart is a double cylindrical ever pumping valvular organ, forcing the living, nutritive fluid into the lungs and through the arteries to the whole system, and causing the veins to return this fluid (blood) minus its nutritive properties and laden with deleterious matter, first to the heart, and then to the lungs to be relieved of carbon dioxide and sent on its cycle.

The third lecture should be on the nerves, showing how one set supplies the muscles, skin and mucous membrane, and how the other, the sympathetic system, presides over organs and blood vessels. The special senses should be taken up one by one and some practical lesson taught.

The fourth lecture should take up the thirty odd feet of alimentary tract: First, the organs of deglutition, and then the organs of digestion. Every day truths should be taught and made to stand out as great object lessons of right living.

The fifth lecture should be on the respiratory apparatus and voice: The windpipe or trachea can be described as four or five inches in length, formed by a series of cartilaginous rings, much the same as often seen at home in the dressing of fowls. The lungs should be described as the real organs of respiration. It should be shown why they always fill the chest cavity; also, how these two bodies are made up of minute and

wonderful little cavities, the air cells, which aid in purifying the blood, stimulating and invigorating the whole of one's being.

In high schools these same subjects could be taken up and amplified and the genito-urinary apparatus added: The kidney with its filtering secreting system, working day and night to rid the body of morbid waste material and maintain the proper equilibrium; the genital organs with their ability to propagate, remembering "Ignorance is Vice" (Socrates).

A lecture or two should be given on bacteriology, embracing a simple definition and classification of bacteria, the habits and characteristics of bacteria, the cause and effect of bacteria in disease, how to prevent bacterial growth with cleanliness, disinfectants and antiseptics; the prevention of bacterial disease, immunity, toxins and vaccination. This is all first aid, a working knowledge to the school child of himself. The application of this knowledge is "first aid." The present need of first aid knowledge by children is more urgent than ever before because of the numerous clubs and organizations into which children are brought together, and also in their school gatherings, which make injuries and accidents probable.

If a boy received an injury to a limb, and he was unable to lift the limb, he would realize that he might have a fracture. It would be easy to explain to him that he needed some support, and that the support should be at least on two sides of the limb. He would understand that the fractured bone would be pulled by the contracting muscles in such a way as to injure the soft parts, arteries and nerves; and that the arteries might be so lacerated by the fractured ends of the bones as to cause hemorrhage. One of Clara Barton's students in first aid work was told by a surgeon that he had saved a man's limb by applying first aid to a broken bone. All of us fear the loss of blood. The laity especially lose their heads when they see active hemorrhage, be it upon the surface or from some cavity. They have only a faint idea of the cause of a hemorrhage. A five-minute talk on blood vessels to the little ones will tell them that in cases of hemorrhage quietude assists in controlling it and that pressure does control it. How often have we seen people faint from loss of blood taken up and placed in a sitting or standing position. The child going over its lessons on the heart, arteries and veins will soon learn that this increases the pressure at the bleeding point, and the practical application of the rules in first aid will be effectual and the lesson firmly impressed on the little one's minds. We teach the child that when a drowning person is rescued he must be entirely out and away from the water, all restrictions to breathing removed, and that artificial breathing by the Sylvester or Schafer method must be quickly and thoroughly resorted to. Cases of suffocation and poisoning from illumi-

nating or other gases demand the same treatment. What an easy and interesting talk of ten or fifteen minutes could be made upon this subject when taking up voice work in connection either with the reading or singing classes. I venture the opinion that not 5% of the school children of the world at the present time are breathing properly. For this condition we all cry out for some remedy. We know that mental and physical development depend to a vast extent upon the proper respiratory functions being carried out. At the end of this lecture the little ones will tell you that when they are overcome with hot air, smoke or poisonous gases, they must displace the deleterious material from the nose, throat, bronchi and lungs with as pure air as possible and do it as quickly as possible. The lesson on alimentation teaches the child that the stomach is the receptacle and that the mucous membrane, lining the whole canal, is a protective membrane, as well as assisting in digestion. A few minutes of the children's attention would show them how easy it would be to dilute the poison in the stomach with some non-irritant fluid as water or milk and then to get rid of it by emesis, and above all how necessary it would be to call a physician, especially when some poison had been taken that would injure the mucous membrane. Teach them that when the external protective membrane of the body is broken infection takes place, how the infection is carried to every part of the body through the blood stream, and how the bacteria multiply by rapid growth. Teach them that these growths are more poisonous than any drug that can be purchased at the drug store. Don't you think that the child would be interested in this? We see him drink in the sights along the blood's highway and become an interested spectator of the workings of the bacteria and their toxins in the human body. Don't you think that the right and wrong can be demonstrated in this way? Don't you think that the profession would welcome a patient if he had some knowledge of anatomy, physiology and bacteriology with a practical application of first aid? Don't you think that much suffering could be avoided, many deformities prevented and many lives saved with the above knowledge and its proper application? While I believe that a little knowledge is a dangerous thing, I am appealing to *you* to start the children on the right road. This will lead them away from superstition and quackery and give them the real knowledge that will be of use to them in after years, and will save hours of pain and precious lives.

THE PLACE OF THE SCHOOL NURSE IN THE PUBLIC SCHOOL SYSTEM

BY

EDNA L. FOLEY

Although an unknown factor in public school life before 1902, the nurse is rapidly becoming a permanent addition to the school forces. If proof of this were needed, we might turn to Dr. Cornell's book entitled "Health and Medical Inspection of School Children," in which figures are quoted to show the increased efficiency of medical inspection after the introduction of the nurses into the Philadelphia public schools. Or we might study Dr. Josephine Baker's reports of their work in the New York City schools.

In a comparatively short experiment, however, the need and usefulness of the school nurse has been demonstrated. Now her position in the public schools is of interest.

The school nurse as a teacher of practical hygiene has a unique opportunity offered her to demonstrate in the public school the Chinese theory of prevention. A school system that has introduced medical inspection has taken the first step in the right direction. When the nurses as follow-up workers have been added, the schools and public alike have a right to demand visible results.

As assistant to the medical inspector, a nurse may save time by making routine inspections, preparing children for examination and keeping dispensary hours for treating minor woes of various descriptions, but neither the amount of time thus spent nor the numbers achieved each day really count for much in the average school if this is all the work accomplished. A nurse should be recognized as a go-between by both home and school, and as such should be held responsible for the physical welfare of all children detected and reported as in need of her kindly offices. By a careful system of follow-up visits into the homes of the children, she should make clear to the parents the handicaps from which the pupils are suffering and should endeavor, by repeated attempts, to win the parents' intelligent coöperation. A knowledge of social conditions and home limitations and a sympathetic understanding of the parents' viewpoint helps wonderfully, for many parents resent so-called interference with their personal liberty simply because they do not understand that both school and nurse desire to advance, not retard, their children.

A school nurse needs to be a judge of human nature to such an extent

that she can approach each parent tactfully and sympathetically, from his viewpoint. She must also know her practical hygiene so thoroughly that she can impress the importance of sound health upon parents of school children; she must know how to teach, in words of few syllables, the children whose habits or defects she would have corrected, and the parents whose convictions need converting. In some centers it is well for a nurse to know under what conditions certain ancestors performed mythical feats in the way of child-raising, in order that the changes between then and now may be pointed out to mothers who fondly believe that no child can need glasses and that adenoids are a new and wholly imaginary condition.

To be a teacher of practical hygiene does not mean that a nurse should be graded as a member of the teaching force, able to instruct the third grade fluently and easily in the cure and prevention of tuberculosis—that has not been her training.

Nurses are not accustomed to groups of perfectly well, normal children. They are more familiar with the defective; the near-sighted, mouth-breathing, flat-footed little urchins who make teachers' lives a burden and retard whole classes. They are not so disturbed because of the poor scholarship, but the scowls between the poor eyes mean headache; the open mouths signify restless nights, and the worn down heels and lagging, scuffling steps are indicative of feet too tired to carry the body weight. Spectacles, nose and throat treatment, some dental work, and shoes strong enough to give growing bodies needed bracing, appeal to her more than an opportunity to teach hygiene in the class room.

A nurse should be able to interest a small group of children in the proper care of their teeth and of their smaller brothers and sisters, but to introduce into an already well-filled curriculum, class-room instructions on health subjects, by a nurse whose experience has been largely with sick children, is burdening both children and nurse unnecessarily until the school nurse's preparation shall include some study of the preparation and presentation of subject matter. It is questionable if this day need ever arrive for the nurse's time can be fully occupied by her mission of interpreting the school's viewpoint and the child's welfare to the parent, who is really the outfielder in this big game of prevention, cure and alleviation. Prevention first, for by detection and exclusion of the few, the large majority of pupils are protected automatically; the home care of the excluded ones hastens their recovery and the alleviation of the small percentage of incurable cases justifies our claim to the title of a "humane people."

In her stimulating book, "The Century of the Child," Ellen Key predicts a wonderful change in humankind when the child is taught to regard his body as he is now taught to revere his soul, and if the school

nurse properly fulfills her function, who can say but that that new era is at hand?

Fifteen millions out of twenty million school children requiring medical or surgical attention is a terrible record, but if the number of defects treated and cured is correspondingly large at first, while the number of both defects and corrections decrease satisfactorily year by year, the nurse will have justified her position as teacher of practical hygiene in the public school.

THE EDUCATIONAL PREPARATION OF THE NURSE FOR SCHOOL NURSING

BY

ELLA PHILLIPS CRANDALL

The history of the growth and development of school nursing is too well known to this audience to call for even a brief discussion of it here.

The value of the nurse in the public schools as an assistant to the medical inspector has stood the test of a decade in this country and about double that time in England. Beginning with one nurse in one city, it is now established in the schools of about one hundred and fifty cities and towns and the one nurse stands now among several hundred nurses, New York City alone employing about three hundred and sixty-five.

We have only to refer to the reports of medical inspectors and to the records of their work to show that they are practically unanimous in their testimony to the fact that she fills a definite need—that the medical officer is helpless to secure results and that his work is inert and inoperative without her. She appears to have become an essential and indispensable factor in any practically efficient scheme for studying and protecting the health of school children.

If these assertions be accepted—and various papers at this Congress bear them out—the fact exists that we have brought into and established in the public school system a new element, a new officer, a new function. Just in proportion to our present recognition of the necessity of guarding the health of our children, of conserving our most precious national asset, does this worker and her function become of urgent importance, and her training and preparation for this work become a matter of wide public interest.

She must hereafter be regarded as an integral part of our educational system. That system has through long years of development been brought to a high state of organization. Pupils have been graded, subjects have been elaborately defined for every grade, teachers have been provided for every subject, a body of officers of varying rank and degree have been installed.

In like manner an appropriate system of training has been elaborated for each member of the teaching and official body wherewith to give him suitable command of the subjects he teaches and the duties he performs.

We have gone still further. Laws have been procured requiring that persons desiring to teach shall equip themselves in certain well-defined ways and shall pass certain prescribed examinations and shall

receive certificates testifying to their adequate preparation to do the work required.

In like manner and in the same degree is it necessary that we should require for a branch of school work so vitally important as the health of the children, workers who have been carefully and adequately prepared for the work which they have to do and whose training has been directed towards a definite and special end.

But how have we carried out these principles in this new and important addition to our public school forces? What are the present requirements, so far as any exist, for the preparation of school nurses?

Whether medical inspection is conducted under Departments of Education or Departments of Health, the usual qualification for appointment of the school nurse is that the candidate for the nursing service shall have had the training of a nurse. In most instances this is the highest if not the only requirement. In a few places additional qualifications are that the candidate shall be a registered nurse and shall have passed civil service examinations.

However, even the fundamental requirement that the candidate shall be a graduate nurse, have received the full ordinary training of a nurse, is not always required. For instance, about two years ago a situation arose in Poughkeepsie which resulted in the resignation of Prof. Herbert E. Mills as President of the School Board rather than agree to the appointment of a candidate who had not received the regular training of a nurse. There have been other instances of a similar nature in which personal friendships or political interests have controlled these appointments to the obliteration of all suitable standards of training and general education.

The present general requirement, then, is graduation from a training school for nurses, and it is necessary, therefore, to clearly understand what, in the present state of nursing education, this means. To fully set forth the present status of training schools for nurses would require more time than is allotted to this paper. We can only point out very briefly a few pertinent facts and some of their causes.

Practically all training schools are under the control of the hospital management to which they are attached. All are created primarily for the purpose of serving the hospital rather than of educating nurses. The hospitals themselves vary in size from ten to one thousand beds and their range of service is as varied as their capacity. Some are intended and equipped for the treatment of one kind of disease only, others for general service. Because of these facts, the clinical opportunities afforded by these institutions and the attitude of their boards toward the importance of the nurses' education determine both the character and extent of her training rather than any suitable, recognized

and accepted standard. Therefore the term "graduate" or "trained" nurse is at present capable of many interpretations and is no guarantee whatever of even a sound general training in nursing.

Nothing more clearly demonstrates this fact than the existence of the numerous short term and correspondence schools. For instance, the Chautauqua Correspondence School alone graduated during the past ten years approximately twelve thousand students as compared with approximately eight thousand from all the registered schools of New York State.

Among other efforts to improve these conditions, attempts have been made in thirty-five states to establish by statute standards of training for nurses and by the use of the term "registered nurse" applied to those whose training has covered certain prescribed ground and who have passed certain required tests and examinations. In states where such laws obtain, the basic qualification for a school nurse should not be a "graduate nurse" only but a "registered nurse." This not only upholds and strengthens efforts to maintain educational standards, but also affords the only guarantee at present existing that the candidate has received even a minimum of suitable training and experience.

But even this comparatively recent and by no means general requirement does not express the measure of preparation necessary for the school nurse of for any other worker in the various fields of public health nursing. The nurse should stand educationally on a level with the teaching staff. Her qualifications should go back of and beyond that of registration. It should be insisted upon that her preliminary education shall be at least a high school graduation or its equivalent. At present the statutory requirement in some states is one year of high school and nurses are holding even that standard with difficulty, owing to pressure from institutions determined to lower educational requirements for admission.

At present, therefore, obviously it is necessary to select carefully even among registered nurses to secure those who have had suitable general education, and yet there should not be placed upon the staff of the public schools in the capacity of school nurses women of much lower educational attainments than would be appointed to any other office in schools, either as teachers or supervisors.

As a fair proportion of women graduating from our training schools have had full high school work or normal training, while several have college degrees, or a partial college course, it will be possible to secure ultimately women of such education when once the requirement is made. Such a requirement will be of great help to training schools, lending support and strength to their efforts to maintain suitable educational admission standards.

But we must go further. The public school nurse needs a very considerable amount of special training not at present provided in any school of nursing. It is to be hoped that the day may not be far distant when our training schools may be free to so enlarge and extend their curricula as to provide several courses of education for their students, each leading to its own diploma, and that this may be done without hazard to the present standards of work in our institutions, which in a great many instances are even now pathetically meager. Until then the special training needed must be sought and found in postgraduate study.

The work of the school nurse, though dealing with all classes and ages of people, is primarily among children. Some hospitals afford no opportunity whatever for training in this branch of work and no general hospital as a rule, gives enough to prepare a nurse properly for school work.

The school nurse needs a very special and practical training in the observation, study and care of children. She should be quite familiar with the ordinary diseases of children. She should be especially so with all the commoner infectious diseases of childhood and with their early symptoms. Nothing short of several months in a children's ward or hospital can provide a nurse with that first-hand knowledge and experience which her work among children calls for.

In addition to this, there should be some further study in a dispensary or clinic in the following special subjects: Diseases of the eye, ear, nose, throat and infectious and skin diseases. The quick recognition of any departure from the normal in all of these should be expected of the school nurse. She must, in other words, diagnose that something needs to be diagnosed. This means only that the nurse exercises the function which every mother exercises whenever she sends for the doctor, except that the nurse acts upon the intelligent judgment which comes from knowledge.

To digress for a moment, right here seems to lie the secret of much contention among medical inspectors regarding the work of a school nurse. The village and rural nurse has been obliged to work upon this plan because often there is no medical inspector. Her work has been so conspicuously successful that it has attracted the attention of medical inspectors in several of our large cities and they have asked to have the nurses do much of the routine inspection in order to release their time for more careful examinations. So far as the writer has been able to learn, this division of duty has been productive of most satisfactory results.

To return to the education of the nurse for school nursing. Her work is by no means limited to the school. It extends to the home—a highly important part, indeed by some considered the most important—where for such reasons as the exclusion of the child from school because of some infectious condition or for other causes equally urgent, the

mother needs advice and instruction. Many questions arise in the course of the nurse's home visiting which do not bear directly upon the child's physical condition or care, yet do indirectly affect it and therefore must be not only recognized and understood by the nurse, but handled intelligently.

It is here that school nurses have failed often and seriously for lack of adequate preparation for their work and in consequence have been subjected to severe criticism from their social worker colleagues. It cannot be urged too strongly that because of the nurse's unique opportunity (due directly to her intimate relation in the homes which she enters) to render a many-sided service, she should be so trained as to qualify her to meet and handle effectively the varied demands that are made upon her. These may be any of the problems which arise in the industrial family. They range from improper home conditions and parental neglect, owing to ignorance or bad habits, to bad housing or other conditions due to private or municipal neglect, or they may be those of extreme poverty.

To deal with these intelligently requires a special training in the treatment of social and municipal problems. This training should include something of housing laws, of domestic and municipal sanitation and of such local regulations relating to them as will enable the nurse to lay hold promptly and with assurance upon all public agencies.

In like manner the nurse must be equipped to meet the almost constant demands for relief, for it takes a special training to know how to give this so that it will not prove to be a positive injury. The right persons or agencies must be sought for the treatment of such problems as cannot be handled appropriately by the nurse. She will be the one to discover the problem; she will not always be the right one to deal best with it, but in either instance the nurse is called upon to render a social diagnosis for which the treatment may involve serious and lasting consequences to the family.

To teach the mother how to feed her children becomes one of the nurse's most frequent duties. To do this requires a special training in nutrition and in dietaries for children of different ages, whereas in her training school the nurse has learned only foods and cookery for the sick. And to this should be added a very careful study of food economics, so that the mother may be taught how to buy economically as well as cook properly the desirable food for her family.

To become an expert in her field, the nurse must go still further—she will find it necessary to specialize on the subject of child-life, the physiology, hygiene and diseases of children and child psychology; she will study the history and present status of the movement in behalf of conservation of infant and child life and these will call for at least elementary courses in sociology, economics and vital statistics. She will

also acquaint herself with the present problems and tendencies of education in order to make herself an intelligent and sympathetic coöperator with teachers and officers of the school system.

Moreover, there are occasional demands upon the nurse to teach elementary hygiene in the younger grades. To do this requires the same special preparation as is demanded for regular teachers, but, granting the nurse is thus equipped, she should be exceptionally capable of presenting the subject of hygiene in a telling and vivid way.

There is still another tendency in some places, *i. e.*, to place the sanitary supervision of the school buildings in the hands of the school nurse and there can be little doubt that a vastly higher standard of common cleanliness would prevail in our schools if nurses were given some authority in this department of school hygiene. It is freely acknowledged by some sanitary experts that nurses make the best inspectors of homes, and it cannot be too much to say—in the light of recent investigations made by the Russell Foundation (See Report No. 101, Department of Child Hygiene) and others which have revealed conditions of uncleanness in some of our schools which are a constant menace to the health of the children—that the conscience and intelligence of a trained woman could well direct the activities of the ordinary school janitor.

By way of summary: The nurse who would adequately prepare herself for expert service as a school nurse should add to her general hospital training the following:

1. Special theory and practical experience in the care and study of infants and children, including general diseases of childhood, contagious and skin diseases and those of eye, ear, nose and throat.
2. Special dietaries and food economics and nutrition.
3. Physiology, hygiene and psychology of childhood,
4. History of the movements in behalf of child welfare.
5. Domestic and municipal sanitation including house construction.
6. Principles and methods of relief.
7. Principles and methods of teaching.
8. All of these will have their foundation in at least the elements of sociology, economics and vital statistics.

Departments providing such training are now established in a good many of our universities and certain elementary courses of instruction

are provided for those whose work brings them every day into the midst of social problems and compels them to take at least the first steps toward a proper handling of those problems.

Nurses themselves are painfully conscious of their insufficient preparation for this important work which is fast assuming the proportions of a national service and are in steadily increasing numbers seeking to supplement their hard-earned experience with more fundamental knowledge.

Therefore, while the claims made in the beginning of this paper, *i. e.*, that in spite of her meager preparation the school nurse's work has been to a large degree effective and that she has already become an indispensable factor to the cause of school hygiene, still we confidently assure our friends and co-workers, the teachers and doctors that each year will witness a substantial lengthening of the role of adequately prepared women to direct the work of school nursing.

WORK OF THE SCHOOL NURSE IN TORONTO

BY

LINA L. ROGERS

Many valuable papers have been given at this convention setting forth the great part played by the nurse in public health. I shall give you an outline of what the city of Toronto, Canada, is doing for the public health through its Board of Education.

When medical inspection of schools was started in Toronto in April, 1910, the first step was to employ a trained nurse who had specialized in school nursing. She began by investigating school conditions, relief agencies, hospital clinics, homes, fresh air camps, etc., so that she knew where each need could be supplied. The city had 70 schools with an attendance of 45,000 children. The next step, was to select a group of three schools. These were visited each day. This brought to light the usual conditions found in schools whose attendance was comprised of children, many of whom were orphans and cared for themselves, and whose homes were in old rookeries, basement rooms and attics. When these conditions were reported, two assistant nurses were appointed and new groups of schools visited. A circular was sent to the principals of all schools, not visited by the nurses, requesting them to report any children whom they considered needed medical attention, to the Chief Inspector of Schools. The requests to visit children in homes and schools were so numerous that it was necessary to appoint two more nurses and two medical inspectors. The chief nurse was asked to visit all schools, where reports were sent in by principals. When the nurse went to a school where three children had been reported in need of a doctor; before she left the building, as many as thirty were found in serious condition from remedial causes. Those were referred to the medical inspector. As the teachers realized the dangers, they brought all the abnormal children and it soon became evident that a general supervision was necessary. In February, 1911, less than a year after one nurse started, eight medical inspectors, one dental inspector and seventeen nurses had been appointed.

The general plan of the work was carried on much the same as in some other cities. The medical inspectors made a routine inspection of all children in school, after each vacation, at midsummer, Christmas and Easter. The school nurse made all the subsequent class room inspections once every two weeks. This plan is carried out at the present time.

Children who have been absent for two or more days must report to the medical inspector or nurse when school opens. If satisfactory evidence is given they receive a readmission slip and are allowed to enter their classrooms. The nurse readmits in the schools where the medical inspector is not present at 9 o'clock. Any doubtful cases are left for his inspection on his arrival. All cases, excepting those with defective teeth and unclean heads, requiring any attention are referred to the medical inspector. Each child must have his or her reference card filled in, stating the reason for seeing the doctor. He in turn makes the diagnosis and recommends the treatment. This reference card is designed to give a complete medical history of the child from the date of entrance to the school leaving. The system is arranged so that the medical inspector or nurse going into an absolutely unfamiliar school, can find in the file, a record of everything each child was referred for, the treatment given, visits made to homes and conditions found, without asking any questions. These records are available to the principal and teachers at all times.

When two or more cases of contagious disease are found, the classrooms are not now closed up, by order of the Board of Health, as was formerly the case. The children not included are allowed to go to school regularly and the nurse makes a daily inspection of each child in the room until all danger is past. The children are most anxious to tell when there is illness in the homes and many cases are found out in this little confidence between the children and the nurse.

Various means are used by the nurses to persuade the children to have their defects remedied. For instance, one nurse bought shoe blacking and *allowed* the boys to shine their shoes if they would have their teeth filled. There was always a waiting line. Another nurse bribed the children to go to the hospital dispensary to have their tonsils removed by curing their warts. This was all done on the nurse's own initiative.

One nurse reported twenty-five cases of suspected tuberculosis from her group of schools while another reported sixty-five cases. Some were found on investigation to be under supervision in clinics, others proved negative.

A nurse referred six cases of discharging ears to the medical inspector, who found on taking cultures that five had diphtheria germs in the pus. These carriers were excluded until negative cultures were obtained. It may readily be seen where the odd cases of diphtheria have their origin.

A nurse reported nine cases of measles from the kindergarten in one day. The only intimation she had was from two parents who sent word that their children were unable to be at school for that reason. The nurse called to find out the cause, with the above result. It is

interesting to note that in six instances the patient was an only child and the parents did not call in a physician. Think of the possibility of an epidemic from such concealed cases should children return to school.

Doctors differ as to manner of contagion!

Another nurse found two children aged 10 and 12 years in one of her schools whose vision had been so neglected that the oculist said they were nearly blind and little hope was held out for saving the remaining sight. This so impressed the nurse that she captured every infant when visiting the homes and enquired about their eyes. She now has a group of tots 3, 4 and 5 years of age wearing glasses. The Board of Education provides glasses for children of school age whose parents are unable to procure them. The glasses are provided by the teachers of the school they will attend when they become of school age. Just reflect what this means to these children and what the State saves. It is estimated in Canada that a child's life is worth \$4,000. It is much cheaper and better to save the health than to try and recover it after it is lost.

Regular tooth brush drills are held in the schools. The Oral Prophylactic Society has had a special brush made for the school children and any child may procure one on payment of 10 cents. Tooth paste is provided at 10 cents for a regular sized tube. A municipal dental clinic has been established by the Board of Health and children are sent there for treatment. It was soon quite evident that this clinic could take care of a very few of the children requiring treatment. Another great difficulty was that many children failed to keep their appointments. The school nurses could not take the time from their school work to see that this was done. The Board of Education at this point provided four dental chairs and set apart rooms in the schools for the work. These are in charge of a dentist six half days in the week for the care of the poorer and younger children. The school nurses of Toronto were so interested that they subscribed \$500 and equipped a model dental room in one of the schools. We hope eventually to have a dental chair in every school in the city as part of its essential equipment.

A new feature of the preventive work is the nose blowing drills. This may sound strange, but it is a powerful factor in preventing adenoid growths and cleaning the nasal passages for breathing. Less catarrh is noticed, and some of the teachers have been so enthusiastic that many of them carry it on as a part of their daily routine. Every child is required to carry a handkerchief and to use it. The nurse herself demonstrates what is necessary and the children accept the drill in a serious manner.

Many parents neglect or refuse to have eyes, throat or teeth attended

to, and these, after every other known means has failed are brought to the Juvenile Court. There the judge very kindly but firmly educates them to the fact that if they are not going to provide the necessities for the children when they can do so the court will hold them responsible. They are fined but the fine is suspended, or the child is put in the Children's Aid Society. They are allowed to go on suspended sentence for a week and invariably the child gets the protection it needs for its future life and citizenship. This is preventing a great deal of delinquency and truancy.

Twelve cases were sent to court in one day and more have been sent since. The lesson had its effect on the community.

The school nurses of Toronto are a body of social service workers in every sense of the word.

A nurse recently when making a home call found the mother ill with fright because her husband had threatened to kill her. The nurse went to the police sergeant and learned that the woman could be protected if she would lodge a complaint. Back the nurse went with her information and took the woman, who was more than willing to go, to the officer, and the next day the man was sent to jail for examination as to his sanity. It was learned that the man had a wife and family in England and was insane. Work was found for the mother and she is now in good health and quite happy.

The family in this report were first visited by a mission worker and was reported by her to the school nurse of the district. The family consisted of the mother, the father who drank, and six children all under 11 years of age, one of whom was an imbecile from birth. One of these children had very large adenoids and tonsils. After repeated home visits from the school nurse, permission was finally obtained by her to have the throat operated upon. The home conditions meanwhile were somewhat improved, the mother being very proud of what she called "a three-room suite," which furnished the house and was being purchased on the installment plan. About two months after the boy's throat was operated upon, another child was added to the family.

Before this baby was two weeks old one of the children was taken ill with diphtheria. Though the child was removed to the hospital the disease swept through the family, attacking all but the new baby and the boy whose throat had been operated upon, and in three cases proving fatal. Weeks after when the nurse was able to revisit the house, the poor mother in telling of her troubles said she felt quite convinced that had Albert's throat not been attended to, he surely would have been taken also. She had the consolation of knowing that through the efforts of the school nurse one child had been saved for her.

Another nurse reports that on March 7th Mrs. H. sent for me to visit her. I had made many visits to the home since I first came to the district. After my visit, a minister in the neighborhood was interviewed and consulted with about the family. He had clothing and coal provided. The father, a good carpenter was out of work all winter and drinking heavily. Had been respectable but had sunk to the lowest depths. The oldest girl 15 years of age earned \$5.00 a week. The second girl, age 13, was sent to work in a carpet factory. I told the principal of the school at once, and he with the minister made up her wages of \$5.00 a week and she returned to school for one month. Now, on my visit I find the mother in terrible distress because the miserable house in which they live was about to be taken from them, because they could not keep up the payments. The mother and seven small children were almost starving and living under very distressing conditions while the father made no effort to get work. Several small jobs were offered him but he wanted to wait until he could get a certain kind of work. Again I consulted with the minister and he tried once more to get work for the father, who refused everything. At last the minister reported the case to the police with the result that the father was arrested and sent to work. He is now getting 40 cents an hour and keeping sober. The principal of the school had been supplying a quart of milk daily to this family while they were in distress.

This case was purely and simply an economic problem and not a part of the school nurse's prescribed duty.

The interesting thing about it is, that everything was dropped after a time by various helpers but it was left to the school nurse to pick up the threads and finally get something definite done.

THE RELATION OF VISITING NURSES IN SMALL COMMUNITIES TO THE PUBLIC SCHOOL

BY

CAROLINE JOSEPHINE DURKEE

It is a notable fact that in small communities there is no definite knowledge on the part of the people of the nature and scope of the work of a visiting nurse. In such communities there are often no organized bodies of relief such as hospital, dispensary, Children's Aid Society, and the like. Each church looks after its own poor, and the Charity Commission or Overseer of the Poor gives relief from time to time to those who apply. In such a community it falls to the nurse to secure active interest and coöperation of all agencies, with the object of providing relief. Her work will include many things:—

1. Infant welfare with instruction of unskilled mothers.
2. Prevention of preventable diseases, especially tuberculosis.
3. Care of the adolescent child, with sex education; such instruction being sometimes to the child, and quite as frequently to the parents.
4. Care of people who are confined to the bed.
5. Instruction in the relation of alcohol to efficiency; the results of fatigue and the remedy.
6. Helping the parents solve the problem of rearing a family on an income which is too small by half. Under this come securing better paid service for some, and employment for others, special labor and instruction in the homes—the heart to heart or shoulder to shoulder work.
7. Directing active little sinners to interesting forms of amusement that have value, and finding “big brothers” or “big sisters” for them (and sometimes for their parents, too).
8. Teaching the family the cost of such service, and encouraging the children to save their pennies to help pay for some of the things provided, such as milk, shoes, and spectacles.
9. Securing hospital provision for those who cannot be successfully treated at home, and free medical care wherever it is needed.
10. Talks before clubs, Christian Endeavor Societies, and Sunday Schools.

11. Getting in touch with reporters, and securing the right kind of publicity without revealing the identity of the people.

The nurse's class room is the home and the street; her pupils are many of them either children, or the mothers who, before they were sixteen, had assumed the task of rearing an ever-increasing family, and the nearly as youthful fathers.

The occasion for visiting any family is some morbid condition of health, morals, or household economics. The social agency that first agitated the question of the nurse, may, for a time, assume the salary, but it is a very easy matter to convince the people that this form of public service is of as much value to a community as the police service, and the salary of the worker as rightful a charge upon the community.

Let us look at some figures from the first annual report of a tuberculosis visiting nurse in a community of 12,000 people in the State of New York—a community in no way unusual. This nurse was in the employ of the Board of Health. There was no dispensary, organized charity, nor other free nursing service in the city.

1. 69 families were visited; 246 persons were in these families; 123 were children under 16 years of age.

2. 71% of these people were American born.

3. 51% of the total numbers of families used alcohol in some form as a beverage. In nearly all of them the children were from their infancy given beer. The usual reply to the question, "Do the children have beer?" was, "Sure; we don't have much, but the children have just what we have." Children of all ages were found stupid with alcohol.

4. During this year voluntary contributions for relief of economic distress, amounting to \$1,611 were given to the nurse. Private citizens, churches, fraternal organizations, Y. M. C. A. baseball team and groups of children gave money without solicitation.

5. 50% of the families needed assistance in food, fuel or clothing; a few required everything.

6. 25% more needed friendly aid in readjustment to housing and employment problems, but received no financial help.

7. 50% of the children required personal care from the nurse.

8. 7% of the children were provided with free institutional care. (The High School Dramatic Club gave \$50 for open-air treatment for a tuberculous girl.)

9. 4% were furnished with glasses. (The Girls' Friendly Society paid for several pair.)

Children 13 years old were found with working certificates secured under false pretenses. Others of the same age who had no certificates were continuously employed.

Children with well defined pulmonary tuberculosis were being encouraged by their parents to study harder, and take high rank in scholarship.

In the process of caring for those afflicted with one disease, the nurse found half of her labor was in the interest of children in the public schools. She also found that other children whose home she was not visiting (and might not, because her field was that of a specified disease and her contract with the Board of Health limited her freedom in service), were in even greater immediate need of relief than some for whom she was caring. She was able to visit a child with infantile paralysis with a tuberculous family history, and secure continuous hospital treatment for her, but was obliged to pass by a neighbor's child of four years who was afflicted with hernia, because the family had no need of a tuberculosis nurse.

Those who most closely followed the work were convinced that a larger public service might have been accomplished if the nurse had been in the employ of the Board of Education. Had she been so employed, the cause of entrance into any home would have been shifted from a morbid to a normal and hopeful condition—interest in the welfare of the child. The change of emphasis in approach from abnormal to normal would alone be of great psychologic significance to all.

The small community will seldom be able to support more than one good nurse, therefore to make the greatest advance in public health there must be co-ordination of all forces. Since the public school is in touch with a larger portion of the homes of a community than is any other agency, those who are seeking to reach the home find the school the surest avenue of approach. It also insures the assistance of the largest body of trained workers without increasing the expense.

By placing the nurse-teacher in the faculty with the other teachers the work of both will prove of greater value. The larger use of the school building will be stimulated. Free classes, clubs, lectures to mothers, baby shows, may be compassed; such effort is in line with the attempt to correlate the school with life in the community. If a school may give a boy credit for hours of satisfactory clerkship in his father's store or office, may not the little sister have credit at school when, under the nurse's supervision, she has learned to satisfactorily serve the family breakfast, or prepare the milk for her delicate baby brother? If she is the

elder sister she must learn to perform these duties—often at the expense of geography and history. When an eleven year boy regularly washes his own clothes in order that he may go to school clean, because his mother of 26 has five children younger than he to care for, is he not entitled to credit in his rating at school? If the nurse teacher does not have conference with the teachers at school, how will the significance of such acts be made to assume the right proportion in the child's life?

Surveying the prospect of the continuation of public health work in the community of which we have been speaking, the following changes would seem to me desirable:

1. The nurse to be employed by the Board of Education.
2. The reason for her entrance into the home to be the child.
3. If possible, the home of every child to be visited by the nurse or by the teacher, and friendly relations established.
4. A record of children under school age to be made; this frequently materially affects scholarship; if the younger children are ill, help the parents secure for them suitable treatment.
5. Public school education of the child to include friendly interest in the home, and such aid as may be necessary to maintain normal efficiency.
6. Religious, charitable and all other interested agencies to be encouraged to create and maintain a Public Health Fund. From such a fund the sort of relief that is needed to maintain a better standard of health in unfortunate homes could be drawn. The relief previously dispensed by the nurse to the few could be made to better meet the need of the community.

SCHOOL NURSES AND SCHOOL CLINICS

BY

E. B. SMITH

I believe that the school nurse, the school clinic and all other matters pertaining to the medical subject of the public schools should be under the local health board. There would be less confusion and the work done more nearly upon scientific lines. When under the board of education, politics are quite likely to creep in, and make the work ineffectual. I would not attempt to create a hospital in a school building, but would instruct the children so that they would obtain knowledge of their own bodies, and know how to take care of their bodies. When once a child begins to realize that aches, pains and sickness can be prevented, they will gladly and quickly do the things which prevent the conditions that brings on sorrow and ends in death.

We should teach the little ones to distinguish right from wrong in their physical workings, also teach them how to live, grow and have a healthy normal body. We should tell them how to develop that body in order that it may grow big and strong. You will see how quickly they will enter into the spirit of your work. Every boy and every girl desires to grow and to be developed in physical as well as mental strength.

THE GROWTH OF SCHOOL NURSING UNDER THE LONDON EDUCATION AUTHORITY

BY

HELEN L. PEARSE

Under the School Board for London the poor physical condition of the children in elementary schools began to impress itself on Head Teachers and Managers and they obtained the voluntary help of the Queen Victoria's Jubilee Nurses in a few schools; their work was to give help and alleviation to small injuries and chronic conditions of disease and dirt. The nature of this work, however, soon led to its discontinuance.

The first school nurse appointed was in charge of an enormous district. She was called a "ringworm nurse" and went about investigating ringworm cases and visiting the parents to impress upon them the need for treatment. The work of this nurse was considered so useful that the number was gradually increased first to 3 and then 6, then 12 and then, in 1906, to 32. By this time the field had been widened to include all forms of obvious uncleanness, ringworm, scabies, and the giving of advice to teachers about special children.

No treatment was given, that not being the function of the education authority, but a scheme was evolved to deal with the worst cases of verminous condition. This scheme was, briefly, after due notice had been given to the parents of the necessity for treatment, to exclude the child and prosecute for non-attendance in a fit state to be in school, and these measures affected a very great improvement in the schools.

In 1907 the Superintendent of Nurses was appointed to control and systematise the work of the nurses. Arrangements were made for regular nurses' visits to the school, and the inspection of children suggested for exclusion under the cleansing scheme, with the object of establishing a standard of cleanliness, and becoming familiar with the work in school. Later two assistant superintendents were appointed, part of whose duty it was to carry out the examinations extended to scholars in secondary schools, training colleges and trade schools.

The nursing staff was increased to fifty-one, and work arranged so that every school was visited once in six weeks, and extra visits paid when applied for by head teachers.

For some time the Medical Officer of Health for the Borough of Marylebone had been allowing children to be cleansed at the disinfecting station, giving them a bath and disinfecting their clothes, and St. Pancras followed suit with excellent results. A proposal was made by

the Medical Officer to organize the work all over London, and by gradual increases of facilities this is still being done. Since 1910 agreements have been arranged with the local borough councils to allow their premises to be used, and on request they investigate the home conditions through their sanitary officials, taking action whenever necessary by cleansing the house and removing and stoving the beds.

This cleansing work has been effective and large numbers of children are being cleansed week by week. 24 nurses are engaged in this branch of work, they follow up the children found verminous in school, and in cases of gross neglect parents are prosecuted and fined.

The work of the nurse has steadily grown, and now it is established as a recognised part of the educational programme and she is required to assist the medical inspector in his work in the schools, and helps to co-ordinate the treatment resulting from that work.

The following are different branches of the work of the Medical Officer's department at the present time.

London is administered in four divisions for school medical purposes, with a divisional medical officer and assistant superintendent of nurses in each; with the latter lies the arranging the nurses' work to suit the doctors', supervising nurses at work, and exclusion from school of all children under the cleansing scheme. There are 90 districts; average number of children per nurse, 8-9000. The nurses' time is given to assisting at medical inspection and investigating personal hygiene of the children, reporting all cases of ringworm, scabies, and other skin diseases and visits to the parents' home concerning the condition of the children, and the clerical work consequent upon all this.

Schools are visited in rotation every month and intermediate visits paid to more unclean schools as often as possible. Weekly reports are made and a record card kept for every case of ringworm and scabies.

Cleansing Stations. The 24 cleansing station nurses take up the cases of verminous children found in the ordinary visits of the school nurse and deal with them under a time scheme, consisting of:

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| <p>1st notice—Re-house condition to sanitary authority.</p> <p>2nd notice—</p> <p>3rd notice—No prosecution without evidence of home visitation by sanitary inspector and report of condition.</p> | <ol style="list-style-type: none"> 1. Notice to parent of condition, opportunity given for 3 voluntary baths. 2. Statutory notice to parent of compulsory bath, if no advantage taken of voluntary bath facilities. 3. Compulsory bath, child conveyed by nurse to station. 4. Further notice of proceedings in the Police Court. |
|--|---|

There are nine treatment centres where school children attend for treatment of eye, ear, nose and throat, ringworm and dental work, where whole-time nurses are at work, and 19 hospitals and local centres where part-time nurses are paid for by the Council to assist and carry out medical instructions.

The treatment centres under my supervision are like miniature hospitals and the nurse endeavours to make arrangements suitable to the parents and as little terrifying to the children as possible.

Their advantage over the hospital is that they are for school children only and keep the parents waiting as little as possible. Being attended by a Council nurse there is better co-ordination between them and the work of the doctor in the schools. If this direct connection is broken confusion and distrust is set up in the mind of the parent and there is necessity for pressure by organisers to get children taken for treatment.

This care committee organisation has been gradually established to co-ordinate voluntary work with official, and gain the assistance of local influence for the welfare of the school children.

Miss Morton and Mr. Peplar, the two principal organisers of care committee work, have 24 assistants whose business it is to keep the activities of the various local committees in working order. During the last year Miss Morton and some of her assistants and workers have been engaged chiefly on work in the Public Health department, in supplying and arranging for the attendance of children at the various places where treatment is given.

It is considered useful to have a local member of care committee present at the medical inspections, whose business is to interview parents as to their means of living and assess the amount charged them for the treatment and supply of spectacles. Organisers or their assistants are also present at the Treatment Centres, to hear the advice given by the doctor to the parents as to after care of children.

At the last appointment of assistants in this work preference was given by the Committee to nurse candidates, and it certainly seemed likely that women trained as nurses would be the most useful people to have; their medical knowledge and training making it more likely that their advice would be listened to by the parents, and their long practical experience making them good at adapting themselves to all sorts of people.

The nurses' uniform is also a help in visiting in poor localities, and an assurance to the people that she is there on genuine business and not out of mere curiosity.

There are at present two open-air schools for London where invalid children attend all day and go home at night, each has its nurse in charge

of the health of the children and responsible to the doctor for the carrying out of his advice between his weekly visits.

The nurse keeps the record cards of the children and enters up the heights and weights, temperature, and blood tests from time to time; supervises the bathing and cleanliness and arranges for all the food taken at the school.

Other schools where trained nurses work are the 42 schools for the physically defective, and the tuberculosis school, and now also at homes of detention where two nurses are at work.

The requirements in training for nurses employed in school work are:

A three-years' certificate from a recognised hospital or infirmary.

Experience in infectious work, nursing of children or district work.

Certificate of sanitary inspector, or certificate as Health Visitor and School Nurse.

This makes a formidable array, but as the school nurse is so much at work alone, and among such large numbers of children, her training should be very complete; so that she may make no mistakes and that her powers of observation and *savoir faire* may be highly developed.

The school nurse becomes the essential link between the doctors, school and parent, and unless she is large-minded, tactful, and unselfish she will frequently meet troubles.

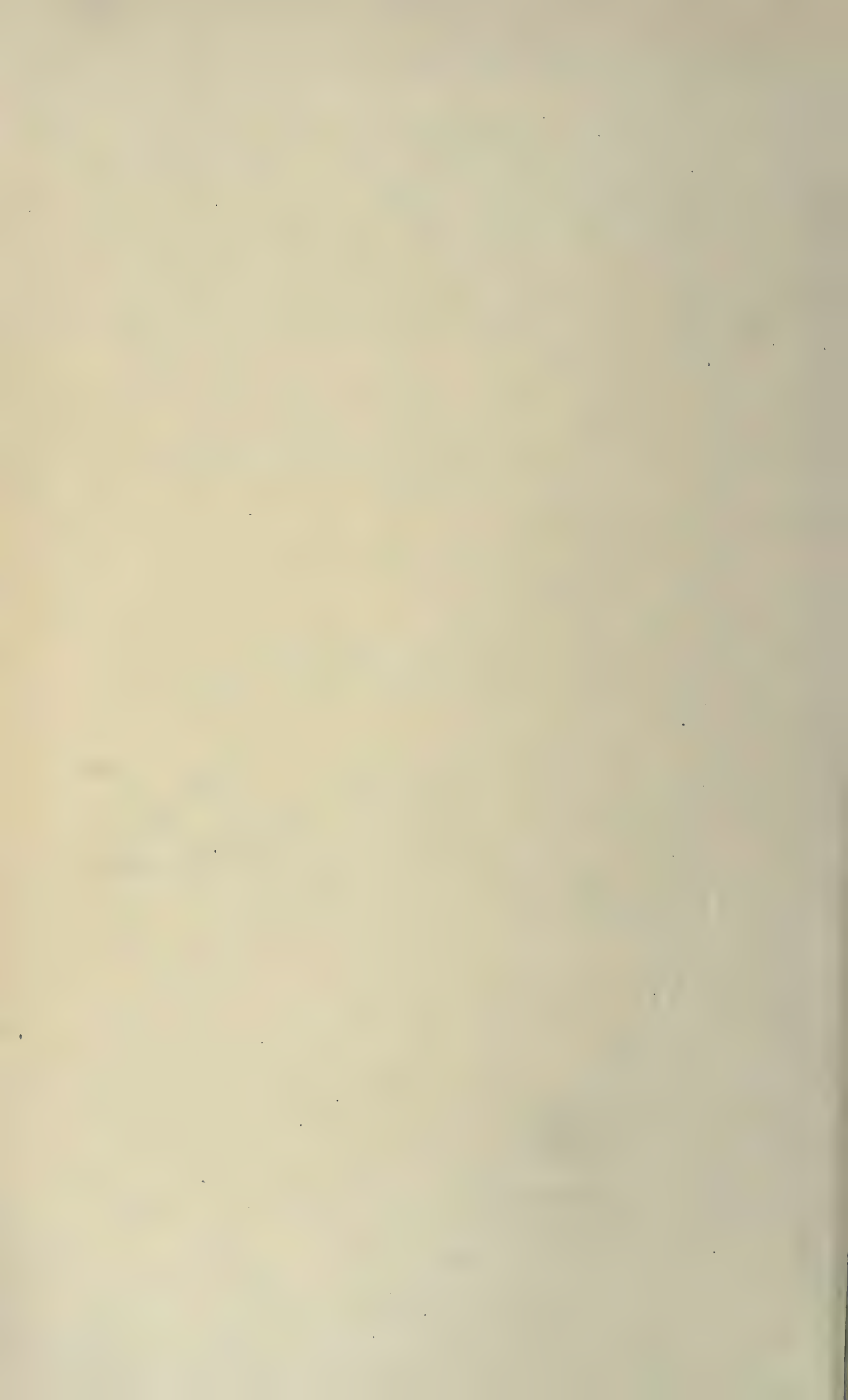
The work of the school nurses is one of the most important that trained women are asked to perform; they act as missionaries of health to the people, the possibilities of good that can be done for the future race can scarcely be exaggerated.

Although difficult and often tedious in the doing the definite results to be seen carry a compensation of their own. A nurse taking up this work becomes much interested in it, and she can feel that she is spending her strength and energy in a good cause and for definite purpose.

Personally, it is the greatest satisfaction to take part in the growth of a work so necessary to a proper education. How can a child make full use of its mental powers while hampered by want of bodily health? It is a waste of time and money to spend the services of highly trained teachers upon children hampered by defective eyesight or hearing, or suffering from enlarged tonsils or adenoids and other evils. If the object of education is the building up of a good citizen, the whole of the child's capacity should be developed together, and this can only be done by the most watchful care that mental activity does not outstrip the bodily strength and that all hindrances to vitality are removed if possible.

Summary.

1902. Queen Victoria Jubilee Nurses attending to minor ailments in few schools for a time and discontinued.
Dr. Kerr appointed Medical Officer to the London School Board.
1 nurse appointed to investigate and advise on ringworm.
1903. 3 nurses appointed. Cleansing work begun.
1906. 6 nurses appointed. Cleansing scheme started.
12 nurses appointed.
32 nurses appointed.
1907. Superintendent of Nurses appointed.
1908. 2 Assistants to the Superintendent appointed.
Examination of scholars in secondary schools and trade schools and training colleges commenced.
Nurses increased to 51.
Marylebone and St. Pancras Borough Councils start baths for verminous children.
Agreement made with them.
1910. Agreement made with other borough councils and cleansing stations set up by the Council, each having a nurse in charge, with knowledge of school work, and taken from the general staff.
1913. With the administrative staff, the nurses on districts giving half time to medical inspection and half time to personal hygiene, the cleansing station nurses, open-air school and tuberculosis school nurses, and those at treatment centres, there is a total staff of 131 whole-time nurses, and many other part-time who are doing work in connection with treatment of school children, but are not appointed by the authority.



SESSION TWENTY-FOUR

Room D.

Monday, August 25th, 2:00 P.M.

THE EXCITING AND CONTRIBUTORY CAUSES OF DISEASE AND PHYSICAL DEFECTS IN SCHOOL CHILDREN (Part One)

DR. J. W. SCHERESCHEWSKY, *Chairman*

Program of Session Twenty-four

DR. J. W. SCHERESCHEWSKY, Surgeon, United States Public Health Service, Washington, D. C. "Infectious and Contagious Diseases Among Indian School Children."

ROBERT HESSLER, M.D., A.M., Chairman Committee on Restriction of Weeds and Diseases, Indiana Academy of Science, Logansport, Ind. "Dusty Air in the School Room."

EDWIN H. PLACE, M.D., Boston City Hospital, Boston, Mass. "The Relation of Diphtheria and Scarlet Fever to the School Session."

JACOB SOBEL, M.D., Borough Chief, Division of Child Hygiene, Department of Health, New York City. "Pediculosis Capitis Among School Children."

JOHN A. FERRELL, M.D., Rockefeller Sanitary Commission, Washington, D. C. "Intestinal Parasites—The Rural School a Factor in Spreading Their Infection."

Papers Presented in Absentia in Session Twenty-four

(Read by Title)

EDWIN O. JORDAN, Ph.D., Professor of Bacteriology, University of Chicago, Ill. "Disease Carriers Among School Children."

A. J. McLAUGHLIN, M.D., Surgeon U. S. Public Health Service, Chief Sanitary Expert and Director of Field Work for the International Joint Commission, Washington, D. C. "The Influence of Water-Borne Disease on the Mortality of Children."

J. G. PARSONS, M.D., Sioux Falls, S. D. "The Common Cold—A Menace to Public Schools and Public Health."

INFECTIOUS AND CONTAGIOUS DISEASES AMONG INDIAN SCHOOL CHILDREN

BY

J. W. SCHERESCHEWSKY

Pursuant to an act of Congress, the United States Public Health Service conducted, during the fall of 1912, an investigation among the Indians for the purpose of ascertaining the prevalence of tuberculosis, trachoma, smallpox and other infectious and contagious diseases among them. The results of this investigation were fully reported to Congress and published as Senate document 1038.

As an essential part of the investigation, practically all the boarding schools and many of the day schools maintained by the Government for the Indians were visited. It is thought that some of the facts brought out by this investigation, in regard to the incidence of communicable disease among Indian school children will serve to emphasize the importance of the medical inspection of schools, the necessity for the rigid application of certain hygienic precautions to institutional life, besides having a public health bearing on future conditions in certain sections of the country.

Scope of the Investigation. According to official figures the Indian population of the United States is 322,715. This population is distributed in practically every State and Indian reservations are located in at least 25 states.

The wide area to be covered and the limited time available (full report had to be rendered to Congress before February 1, 1913) rendered the detail necessary of 14 officers in order to cover the ground. The writer was one of these. All these officers had received special training in physical examination and the recognition of communicable diseases.

The total number of Indians examined was 39,231, of which 19,958 were school children. The Indian Schools, and particularly the boarding schools are the chief agents by which the Government is endeavoring to improve the Indian and to prepare him for citizenship. Particular attention, therefore, was paid to the prevalence of communicable diseases in schools during this investigation.

Of the 19,958 Indian School children examined, 16,470 were in boarding schools, and 3,488 in day schools. Indian boarding schools are of two kinds, reservation and non-reservation boarding schools. Reservation boarding schools, as the name indicates, are located on reserva-

tions and receive scholars from that locality. Non-reservation boarding schools are situated in towns and cities and receive Indian pupils from various sections of the country.

It may be stated at once that the most interesting part brought out by the investigation was the remarkable prevalence of trachoma in practically all Indian tribes. Trachoma and tuberculosis are the chief scourges of the Indian race and the school children did not escape its effects.

Prevalence of Trachoma Among Indian School Children. Out of the 16,470 Indian boarding school children examined in 133 boarding schools, 4,916 or 29.68 per cent were found to be trachomatous. In certain schools the infection was well-nigh universal.

For instance, at the Rainey Mountain School in Oklahoma, Guthrie reported that no less than 105 out of 114 pupils, or 92.1% were afflicted with trachoma. At only 3 out of the 133 schools reported upon were the pupils found free from the disease. The freedom from infection was due to the fact that no trachoma was found in the Indian population from which these pupils were drawn.

Classifying these schools in groups according to the frequency of trachoma infection, we find that in 2 schools 90% of the pupils were found to be trachomatous; in 8, from 80-90%; in 10, from 70-80%; in 9, from 60-70%; in 8, from 50-60%; in 8, from 40-50%; in 7, from 35-40%; in 12, from 30-35%; in 14, from 25-30%; in 10, from 20-25%; in 17, from 15-20%; in 11, from 10-15%; in 10, from 5-10%; in 4, from 0.5 to 5%, and in 3 schools only was no trachoma found. In 88 schools, or approximately 66% of the total number examined, 20% or more of the pupils were found to be suffering from trachoma.

If we compare the rate of trachoma prevalence among Indian boarding school pupils with that observed among Indians, exclusive of school children, it is evident that the disease is much more frequent in the schools.

The examination of 17,822 Indians above and below school age resulted in finding 3,064 cases of trachoma, an incidence of 17.2%. This is nearly one-half the rate of prevalence in boarding school children which, as already pointed out, was 29.86%.

This results in the inference that the conditions in the schools are such as to favor the spread of trachoma among the pupils. This inference is strengthened by the fact that the trachoma rate in schools was found to be generally higher than for the reservations in which they are located. In non-reservation boarding schools that rate of infection was also found to be high in groups of pupils from reservations where the trachoma

was but little prevalent. This renders it likely that they contracted the disease at such non-reservation boarding schools.

Prevalence of Trachoma in Indian Day Schools. In addition to the boarding schools, the Government maintains day schools on the various Indian reservations. Owing to the short time available for the investigation and the inaccessible situation of many of these schools it was not possible to cover them so completely as the boarding schools. Nevertheless, 3,488 pupils in day schools were inspected and 752 cases of trachoma found, a percentage of 21.55. This corresponds more nearly to the rate found for reservation Indians, exclusive of school children, *i. e.*, 17 per cent. The excess of nearly 5 per cent. of trachoma incidence, however, points to conditions peculiar to schools which facilitate the spread of trachoma.

Significance of the Prevalence of Trachoma in Indian Schools. We find from the foregoing that a large proportion of Indian pupils are suffering from a chronic communicable disease which menaces one of the essential senses of the body, that is, that of vision. The school has been, and always must be one of the principal agents of the Federal Government for civilizing the Indian.

Yet, by reason of the great prevalence of trachoma, much resulting from the plans devised for his benefit will be nullified by reason of the visual impairment of suffering, and loss of individual efficiency caused by this disease in later life.

Nor is this all. The presence of trachoma among the Indians is not without its menace for the white population. Many reservations are now being opened to white settlement and the time seems not far distant when the Indian will be absorbed in the white population. The Indian child will then attend public schools, and, in the absence of systematic medical school inspection, we can predict that trachoma may then become widely disseminated among the whites. That this danger is not imaginary is shown by the fact that it was necessary to close the public schools in Bisbee, Arizona, on account of an epidemic of trachoma, presumably introduced by Indian school children.

An idea of the seriousness of the trachoma situation among the Indians can be gained when Boldt tells us that a community which shows a trachoma infection of as little as 16 cases per thousand must be regarded as a heavily infected community.

In justice to the Indian service it should be stated that the medical branch of that service is fully cognizant of the extensive prevalence of trachoma among the Indians and its significance. So far, however, men and funds have been lacking properly to deal with the situation, but it is likely that they will soon be forthcoming.

Tuberculosis Among Indian School Children. The presence of heavy tubercular infection among Indians has been recognized for a long time. Owing, however, to the wide distribution and inaccessibility of the Indian population, the incompleteness of available records and confusion of nomenclature in the past, such records fail to give accurate testimony as to its past prevalence.

Of recent years the records have been more carefully kept and furnish more reliable evidence as to the prevalence of this disease among the Indians. The following figures have been given as to the death rate from tuberculosis for the three principal races of the United States:

Whites, 1.73 per 1,000; Negroes, 4.85 per 1,000; Indian, 5.06 per 1,000.

If we allow 7 cases for every death the case incidence of tuberculosis, based on these death rates would be 12.1, 33.9 and 35.4 per 1,000 respectively.

While it was evident, from the large number of cases enumerated, that tuberculosis was extremely common among Indians, probably far more so than among any other class of the population, the officers engaged in the investigation found it impracticable to employ methods other than inspection and the physical examination of suspects. Two officers engaged in the investigation also applied the von Pirquet cutaneous test for tuberculosis in a certain number of Indian children.

Owing, however, to the generally observed regulation of the Indian office which requires the exclusion of tuberculous children from the Indian schools, the amount of active tuberculous encountered in these schools was not great compared to the rate of prevalence in the general reservation population.

Nevertheless, the amount of tuberculosis found among the school children was found to vary according to the location of the schools and the degree of medical supervision exercised.

Thus, among 329 school children examined by Billings in Nevada, 62 or 18.84 per cent. were found to be tuberculous. This high percentage is doubtless due to the very high rate of infection noted among the Shoshones and Pahutes of this State, 22 per cent. of those examined in the general reservation population being tuberculous.

On the other hand the writer and Preble, in examining 3,103 Indian school children in North and South Dakota found only 1.67 per cent. tubercular, while the percentage found by examination in the general Indian population was between 5 and 6 per cent.

Results of Cutaneous Test (von Pirquet's). Fricks and Smith applied von Pirquet's cutaneous tuberculin test to 1,225 Indian pupils. With reference to white children McNeill reports (Edinburgh Medical Journal, April, 1912), that positive reactions to this test among 531 white children

ranged from 14.1 per cent. for children under one year to 55 per cent. in girls—11–14, and 60.5 per cent. in a group of boys of the same age.

In New Mexico Indians, Smith found a considerably higher percentage of positive reactions. In one instance 95.5 per cent. of the children over 11 years of age responding positively to the test. This was among the Jicarilla Apaches who gave the highest incidence of clinical tuberculosis of any tribe he examined.

On the other hand, in the case of the Taos Indians among whom but four deaths have been recorded as due to tuberculosis, the percentage of children giving a positive cutaneous reaction was 1.42.

The main conclusions drawn from these tests were that a high percentage of positive reactions among the school children was found associated with a like high death rate from tuberculosis in the general population. In consequence, the results of this test in a given population under known conditions furnishes an idea of the death rate from tuberculosis which prevails and serves also as an index of the amount of active and latent tuberculous infection.

In spite of the regulations excluding tuberculous children from Indian schools the number infected was found on examination to run very generally from 2 to 5 per cent., the minimum being 1.67 per cent. for the Dakota schools, and the maximum 18.84 per cent. for the Nevada schools. As may be expected, glandular tuberculosis was the most common form of the infection, with pulmonary and osseous tuberculous in order of frequency.

By reason of the limitations of time and opportunity placed upon the investigation it is believed that the prevalence of tuberculosis reported by the investigators is less than that actually existing among the Indians visited. The regulations, excluding tuberculous children from school has the effect of artificially diminishing its incidence in this age-group of the Indian population. Nevertheless all the evidence points to a prevalence of tuberculosis among the Indians greatly in excess of that in the white race, depending upon locality. This prevalence is sufficient to warrant the prosecution of vigorous measures for the relief of the situation.

Smallpox and Vaccination Among Indian School Children. As smallpox was one of the diseases specifically mentioned in the law providing for the investigation, special attention was paid to its prevalence and the degree of protection by vaccination among school children and reservation populations.

No cases of smallpox were found among the 19,958 school children, and but six cases in the 39,431 individuals examined. The medical records at reservations and schools were, generally speaking, in an

unsatisfactory state and furnished but little reliable evidence as to the past prevalence of the disease. Judging, however, from the data which could be collected, it was not apparent, at the present time, that smallpox is a disease of greater frequency and severity among the Indians than in any other race.

There have been, however, some extremely severe epidemics in the past in the course of which whole tribes have been nearly wiped out.

In regard to vaccination most adult Indians are as well protected as the average white rural population. As far as school children are concerned the regulations of the Indian office are explicit in that they require the vaccination of all school children. The degree to which this regulation is enforced, in practice, however, varied in the different schools. In schools where the medical supervision was more complete practically all the children were found to show good marks while in too large a number of boarding schools and many of the day schools some 15 to 20 per cent. of the children were unprotected.

The vaccination of Indians has been stimulated in the past few years by the occurrence of small local outbreaks. Recently, however, these precautions have been relaxed so that there is danger of the growth of an unvaccinated generation.

Other Communicable Diseases

Typhoid Fever. Typhoid infection among Indians must be regarded as extremely rare, in spite of the existence of insanitary conditions favoring its spread.

This rarity of the disease is apparently due to three causes:

1. The disease has not, as yet, been extensively introduced among the Indians.
2. The Indian's water supply is usually safe, as he generally lives on an eminence at a distance from his water supply.
3. The Indian is not a milk drinker.

As might be expected from the rarity of the disease in the general population no case was observed among the Indian school children. At most of the schools visited care had been taken to secure a good water supply. In some instances, however, the safety of the supply was compromised by defects in well casings, leaky supply pipes and the like. An opportunity for the spread of the disease when introduced was afforded at some of the schools by the presence of insanitary privies and incomplete screening of dormitories and class rooms. The dining rooms and kitchens however were generally screened.

The contacts between the Indian and the white race, however, are increasing from year to year. It is to be expected that, in the future, typhoid fever will become increasingly prevalent among the Indians and, unless the proper precautions are taken, the schools will not escape.

Infectious Diseases of Childhood

Measles. The records of practically all the schools contain notes of extensive epidemics of measles among the pupils. In the reservations of the Northwest the disease appears to be mild with but little resulting mortality. On the Southwestern reservations, serious epidemics have been noted.

Among the Tuni Indians a severe epidemic of 577 cases with 123 deaths, or a mortality of 21.5 per cent. took place in 1912. It is worthy of note, however, that 80 additional cases occurred in the reservation boarding school without a death. In similar fashion there was one death among 428 cases in the past eight years at the Siletz school in Oregon. The disease seems to be of milder type in the schools whether in the North or Southwest, while in the reservation population the mortality has been higher in the Southwestern reservations.

Scarlet Fever. All physicians in the Indian Service unite in agreeing that scarlet fever is decidedly rare among Indians. But one case of scarlet fever was encountered during the investigation. The records of the various schools contain but little mention of the disease. A record of 45 cases and no deaths was found at the Fort Defiance school in May and June, 1911, and seven cases with no deaths at the Lower Brule Agency school from October 10 to November 13, 1912.

Diphtheria. No cases were met with among Indian school children and no data of value as to its prevalence could be found. It is the opinion of the agency physicians that the disease is infrequently met with among Indians.

Whooping Cough, Chickenpox and Mumps. Whooping cough is common among Indian school children but less so than among the whites, owing to the low density of population per square mile.

Chickenpox and mumps are common. The frequent occurrence of chickenpox is important as, unless all school children are vaccinated, a smallpox epidemic might get under good headway by being mistaken for chickenpox.

Contagious Skin Diseases. The uncleanly personal habits of primitive Indians form the spread of contagious skin diseases. Many Indian children come to school suffering from scabies. *Impetigo costagiosa* is

common and severe among school children. Peducili of the scalp and body also give rise to severe cases of eczema.

Intestinal Parasites. The Cherokee Indian school children, in North Carolina, suffer from hookworm infection in common with the poor white mountaineers of that section. In 1911, 41 per cent. of the pupils in the Cherokee boarding school were found infected with hookworm. Other intestinal parasites, especially the tapeworm and the round worm, are common among Indian school children and may produce a high degree of anemia.

It is evident from the foregoing, that, outside of trachoma and tuberculosis the amount and severity of the communicable diseases affecting Indian school children is not excessive. The widespread diffusion of trachoma among Indian pupils gives ground for grave concern. It is plain, from the much greater incidence of this disease in the schools, as compared to the general Indian population, that there are agents assisting in its spread. I have already mentioned the circumstance that in certain non-reservation boarding schools groups of pupils from lightly or non-infected reservations were found to present a high incidence of trachoma infection. The return of these pupils to their homes may well result in the implantation of a disorder in sections where it is absent or at most slightly prevalent.

Sanitary Conditions in Indian Schools. Certain conditions observed in the Indian schools had a bearing more or less direct upon the propagation of communicable diseases, among them particularly trachoma.

Conditions Inherent in Institutional Life. It is evident that in any school plentiful opportunities exist for the dissemination of communicable disease by reason of the occasion offered for intimate personal contacts. Dealing as they do with a population primarily infected with tuberculosis and trachoma, Indian schools, in the absence of stringent precautions, are apt to be active agents in the dissemination of these disorders.

Fricks makes the statement, with reference to an Arizona Indian boarding school, that, according to the superintendent, out of 249 pupils leaving the school in the past 10 years, 33.74 per cent. have since died from tuberculosis. It is possible, however, in this instance, aside from infection acquired in the school, that the transition to school life from nomadic existence of this particular tribe was too great.

Smith has pointed out that the regular hours of work and study and the irksomeness of the labor required from Indian school children, while light, may be a greater tax upon the resistance of the Indian child than the hardships of the indolent camp life to which he is inured.

Overcrowding and Ventilation. Overcrowding beyond their capacity seemed to be the case in the majority of Indian boarding schools, or owing to disproportionate numbers of the sexes, while the total enrollment might be below the rate capacity of the school the dormitories for one sex might be overcrowded, while ample room might exist for the other.

The regulations of the Indian office allow 500 cubic feet of air space per pupil. This is sufficient with good ventilation. The winter weather in the Northwest is so severe that it would seem impracticable to ventilate crowded dormitories at night by natural means. Be that as it may, chronic naso-pharyngitis, enlarged tonsils, and adenoid growths are too frequently observed among Indian school children and bear mute evidence to inadequate or incorrectly moistened air supply.

Washing Facilities. The regulations of the Indian office call for separate towels for each pupil and washing in running water only. It was found that, while separate towels were provided, the washing arrangements were defective or inadequate.

In some instances the common hand basin was in use and usually the protection furnished by separate towels was nullified by the way they were disposed of when not in use.

The towels were generally hung up by loops at their corners upon rows of nails marked with the pupil's number and name. These nails were so closely spaced that the towels overlapped and, in this manner infection might be transferred from one towel to the other. In some schools, however, the "Pullman" system of separate towels were provided.

The fixtures provided for washing in running water might be criticised from the standpoint of inadequacy and because old-fashioned faucets instead of the pedal variety were used. Bar soap used in common by the various pupils was also the rule instead of liquid soap or powdered soap in sanitary containers.

Tubs, instead of shower baths, are still in use in most schools for bathing purposes. It is plain that the tub used in common by many individuals and imperfectly cleansed may be a factor in the spread of communicable diseases.

Toilet Facilities. The plumbing fixtures in many Indian schools are of obsolete pattern, located in damp and dark basements and frequently in a state of disrepair. At some schools the ordinary outdoor insanitary privy is still used and serves as the breeding place of numerous flies in summer.

The Common Drinking Cup. The common drinking cup is too fre-

quently seen in Indian schools. Sanitary bubble fountains are being gradually introduced.

Flies. Indian boarding schools are inadequately protected against flies. Only dining rooms and kitchens are screened but not dormitories or class rooms. Flies may spread trachoma in the same way as other communicable diseases.

Sanitary Supervision. The sanitary supervision of pupils in many Indian schools leaves much to be desired. Pupils suffering from trachoma were allowed freely to mingle with the others in the class room, at play and in the dormitories in most of the schools visited. Tuberculous pupils are sent home when detected, but the frequency with which such conditions are discovered depends more or less upon the character of the medical supervision.

When the superintendents of schools are physicians, such supervision is more complete. On the other hand, when no medical supervision is provided, or the medical attendant is an agency or a contract physician there is great room for improvement. The contract physician is usually too busy with his private practice to pay much attention to the school and the agency physician is frequently called away to distant parts of the reservation.

It is evident, from the foregoing, that the sanitary conditions in Indian schools are not satisfactory in many instances, and improvement in the medical inspection and supervision of Indian school children is needed.

This is necessary not only in view of the effects of trachoma and tuberculosis upon the Indian himself but by reason of the continually increasing inter-communication between the Indians and the whites and the foreshadowed absorption of the Indian in the general population.

It is necessary to state, however, that there were evidences of recent systematic attempts to improve these conditions. The extent of improvement, however, is largely dependent upon available funds.

DUSTY AIR IN THE SCHOOL-ROOM

BY

ROBERT HESSLER

There are all kinds of dust. The most injurious kind to the masses is that containing infection, very common in a "spitter's town."

Dust in the school-room implies dust elsewhere. If streets are deep in dust, sidewalks filthy, we may look for similar conditions in the school-room. To study the dust problem one must go where dust is plentiful, just as the scientist who studies specific diseases goes to regions or localities where they prevail. There are relatively few problems under simple life conditions. To understand complex city conditions we must first study simple country conditions.

Man for countless ages has been an open air animal; only recently has he attempted to domesticate and urbanize himself, to live in closed houses and smog-covered cities. The weeding out of the unadapted has been terrific. To the evolutionist and biologist the effort to "save every child" must seem ridiculous; but many may be saved by a proper environment. Some of those tided over under present-day conditions lead lives that are really not worth living. To be surrounded by health- and life-destroying microbes makes life one continued struggle for existence.

Physicians have long known that schools are the breeding places of diseases. The medical inspector sees or should see early stages and he should seek to prevent what the physician often can not cure. Many parents do not call a doctor until the child is too sick to go to school. Medical inspection has revealed a deplorable condition of affairs, all sorts of defects, abnormal functioning, reactions, ills and diseases. All kinds of reasons have been given and many remedies proposed. Now any study of school conditions is incomplete if we fail to consider also the life of the teacher and the community as a whole. A community may be judged by its schools, as it may be judged by its streets, newspapers, or its doctors.

We constantly use the terms normal and abnormal. What do such words mean? Is a spitter a normal man or an abnormal one? It depends on the locality.* Is dust-infected air normal or abnormal?

*Several years ago a friend and I took a lot of "spit pictures." While the camera was pointed at a nasty mass of tobacco juice, quids and stubs on the sidewalk, a man came up, looked intently, and finally asked, "What do you fellers see there? I don't see anything!" When I showed the pictures at the International Congress for the

It depends. Is a child with a sclerosed throat normal or abnormal? In reply it may be asked, What do you expect the after-effects of an inflammatory process to be? Or, What effects can you expect in a constant warfare against infection?

In order to understand the ill health, defects and diseases of school children we must first understand the community. After a systematic study of over thirteen years I have come to the conclusion that the dust factor is without doubt the most important in accounting for prevalent ill health.

Normal man is still an outdoor, clean air animal. Is it any wonder that he reacts to abnormal town and city air conditions? Compare or contrast the straight, tall trees of the forest with the gnarled city tree, decayed at the heart, or the Indian, straight as an arrow, with the stunted, deformed city inhabitant. The slum impresses its influence on the body, countenance and mind of the child; there is no difficulty in distinguishing it from the country or suburban child.

There is a constant struggle against destruction. Man, like animals and plants, tends to perish when massed. Old time cities were highly unsanitary, the mortality rate was high. Much has been accomplished through sanitation. Some cities are in the lead, others are very backward; some are overgrown villages, with unpaved streets or if paved dirty and dusty, no clean water, no sewers, no food inspection. With many sidewalk and floor spitters about there is infected dust indoors and out. "Fresh air" loaded with infection is not clean air. Fresh air and clean air are not synonymous. Wherever people live or meet one can speak of the Air of Places. From ancient times "the constitution of the air" has been considered as playing an important rôle, as the very term "malaria" indicates.

The early immigrant to Indiana who did not know how to choose a sanitary environment was severely afflicted by malaria. The present-day immigrant and his children fall victims to malaria, they seek the city. It is often said the immigrant makes the slum; the truth is he finds it waiting for him.

In early days and until quite recently malarial fever dominated everything. Locally it was known as the "Wabash shakes." To-day Malaria, "False Malaria," Dust Infection, or, to give it its proper name, Coniosis, has taken its place. Our "Triad of American Diseases"—catarrh, dyspepsia and nervous prostration—are usu-

Study and Prevention of Tuberculosis, at Washington, 1908, some foreign visitors exclaimed, "Impossible!" "Unbelievable!" Those from the Mississippi Valley know the condition.

ally varying manifestations of Coniosis,* as I have attempted to show.

The prevalence of malarial fever depends mainly on the presence of wet places where mosquitoes breed. In my own state with free drainage malaria has become a rare disease, except in some backward communities. "False Malaria," Mal-aria or Coniosis on the other hand is widely prevalent, that is wherever the tobacco chewer and street loafer is tolerated—he sets a low standard of cleanliness. There is a distinct seasonal influence. Coniosis is least prevalent during the open door season; there is free ventilation and bright sunlight sterilizes the dust. It is most prevalent at the close of a long winter when filth has accumulated on streets and in houses, when infected dust is blown about or tracked in.

In every community there are individuals who are the bane of the physician—"Old Chronics," who have tried everything to get relief—everything but clean air. All sorts of explanations or diagnoses have been given them for their —what shall one say—disease, ill health or symptoms? Many have no faith in medicine, they believe it is merely a system of guesswork. According to my observations, continued for many years, many are dust victims, they react to bad air. This is an explanation that many accept at once. It is an explanation that enables them to reduce symptoms to a minimum. Coniosis is a good working theory, a good explanation for the young to adopt before sclerosis appear.

A study of prevalent ills and symptoms in the light of Coniosis leads one to arrive at conclusions at variance with popular beliefs. Thus for instance, one is inclined to look upon catarrh in the great majority of cases as a conservative process, to get rid of inhaled dust, and that cough is beneficial as it helps to bring up secretions or excretions.

Catarrh, however, is an indefinite term. There may be a pure mucus formation, the mucus may be tinged with gray or even black; "spitting

*To give a definition of Coniosis, one that would be both inclusive and exclusive, would exceed the time limit of this paper. One feels himself in the position of the alienist who is asked to define insanity in court. No matter how he defines it briefly there will be quibbling. It requires a volume to make the matter clear, there are different types of insanity.

I must content myself with referring the reader to my papers, "Atypical Cases and Dust Infection," *American Medicine*, 1 Oct. 1904, and "Coniosis," in *Proceedings Indiana Academy of Science*, 1911. In the former paper the subject was looked upon from the standpoint of the physician—as a protean disease; in the latter from the standpoint of the biologist and sociologist—that it is a reaction to an abnormal environment. To the average mind the term Disease suggests Cure, while Reaction brings to mind Prevention.

Coniosis is a new explanation for old and prevalent ills, viewed from the standpoint of causation and prevention.

black" may result when much dust is in the air. There may be active inflammation with pus, followed by scar tissue or sclerosis, as seen in the throat and tonsils. Tonsils are practically absent in clean air people but common under dusty air; the same may be said of adenoids. Nearness of the eyes to the air passages full of infection explains why eye defects are so common; a little scar tissue may produce eye strain.

I live in a city of 20,000, a good place to study Coniosis. The high school is near the business center of the city; the graded schools are in the residence district, some in the very outskirts. The buildings are mostly old; not one is really modern, with all that that implies. None have ample playgrounds or equipment. Some playgrounds are fairly clean but as a rule they are either muddy or dusty. Much filth tracked in means air full of dust; with imperfect ventilation this remains suspended for a long time—to be reduced gradually in the process of respiration!

The High School has no playground, not even a meeting place for the children. It has a sham system of ventilation that does not and can not operate. "Ventilators" in the rooms are not connected with any outlet! Great clouds of infected dust blow up the street from the heart of the city and sidewalk filth is tracked in and pulverized under the feet. From a sanitary standpoint conditions are about as bad as they can be. The "monkey smell" is marked, and even more marked in the basement of the adjoining library which is used as a classroom. This Carnegie Library, like the High School, is an imposing building but wholly lacking proper ventilation. Needless to say the medical supervisor would find a fruitful field for gathering statistics.*

The country school teacher can tell an unedifying story of the appearance of the school-room after a political meeting. She does not believe in the use of the building as a social center, for men only, especially when she herself looks after the janitor work.

Some communities even tolerate teachers who chew tobacco! Quite naturally these antagonize the efforts of the physician and underrate the importance of clean air. Shall we also mention the robust physician who always has a cigar in the mouth, who sides with the tobacco chewer and spitter† and minimizes the importance of infected dust?

*But the "old order changeth." A modern high school building is being erected, and preparations are being made for a water filtration system.

†Our European visitors should not fail to make a tour of inspection; they will still find conditions described by Charles Dickens sixty years ago. Let them visit the smaller county seats in the Mississippi Valley, travel on small local trains and on inter-urban cars. Let them tell of the results of their inspection, some of the backward communities may profit by it.

Why do those opposed to such conditions not speak out? Teachers do not speak out for fear of losing their positions! The small town doctor does not speak out, much less write freely—it would mean professional suicide. And as to parents: Too many are “cuckoo parents” (in the words of our ex-President), “They leave everything to the authorities.” If farmers knew to what sort of high schools they are sending their children, they would think twice.

Symptoms are of two kinds, subjective and objective, the latter are also known as signs. Many of the symptoms of specific diseases are objective. Symptoms of dust infection or coniosis on the other hand are mainly subjective and there may be no discernible lesions. Because of this many a robust physician does not, and apparently can not, understand some of his patients who bitterly resent the diagnosis of “imaginary ill.”

The symptoms or ailments of children are often vague, they puzzle the physician. A school boy or girl may feel very bad one day and be out at play the next. Often symptoms are psychical rather than physical, manifested by inability to concentrate on lessons. With some there is continued disability while attending school. Many backward children, “dullards” or “laggards,” are Dust Victims. They do well under good air conditions. Some do very well on the opening of school in the fall when doors and windows are open but begin to fail with the advent of the closed door season; such may do well in Open Air Schools. Dull, backward high school students may do well in clean colleges. On the other hand the college graduate and the successful country teacher may be failures in the unsanitary schools of the spitter’s town; they may again be successful on removal to a large city where cleanliness is insisted upon.

If it is difficult to classify “old chronics” (there are all sorts of factors that must be ruled out), it is even more difficult to classify or group children who complain or have defects. But we may assume that when the parents are dust victims a similar manifestation may occur in the children, modified by environment. A father working in the heart of the city may complain constantly; the mother may complain only after an occasional exposure, as after a shopping tour or a visit to the poorly ventilated theatre or even church. A schoolhouse may be located half way between the heart of the city and the suburbs; the child from the slums may find the air better than that of his home, while the child from the clean suburbs may find it bad.

Deficient or improper food is of course a powerful factor in warding off infection. But under-feeding in the small town is rare and of minor importance. Usually the opposite is true, children are overfed.

Shall altered functioning, symptoms, defects and abnormalities

of all kinds be regarded as "diseases" after the manner of the patent medicine man and of the symptom prescriber? It simplifies matters greatly to do so! Unfortunately the word disease at once brings to mind the idea of cure. If symptoms and abnormalities are regarded as reactions due to an abnormal environment, the idea of prevention seems logical. Perhaps we had best regard symptoms as warnings that something is wrong.

There are any number of ills that do not rise to the dignity of disease, often they are blessings in disguise. Many minor maladies disable temporarily; remaining away from school or work gives nature a chance to restore the balance.*

Often when no other reason can be assigned the child is said to suffer from "overwork," meaning too long or too hard lessons, a common explanation in my town. But at times there is actual overwork—of the defenses of the body in warding off infection. We may say the lymphatic system is overworked. This is a very practical explanation, one that appeals to parents; they can understand the need for offsetting hours in bad air by hours in good air, and the need for days of rest and vacations.

The saying that the mouth is full of bacteria,† including those of deadly diseases, is one based on city cases, on people who inhale infected dust, full of microbes of all kinds. The hunter and trapper in the wild-woods or the explorer at the north pole can expose himself and not contract pneumonia. The city man in bad air must be cautious not to expose himself to so-called exciting causes, draughts, wet feet, etc.

Which is of greater importance to the student of dust influences, heredity or environment? We all realize that as individuals we have little control over heredity or hereditary factors, but we can largely control our environment, we can alter it or remove to a new one. Children can be kept out of unsanitary or health- and life-destroying schools, unless laws make attendance compulsory. Many families are constantly on the move, some are in search of better health.

What is of most value to the individual and to the community? A so-called education at the price of lost health, perhaps lifelong ill health,

*Specific diseases according to my observations run a milder course in good air than under bad air, even in adults. Often the country doctor has doubts about the correctness of his diagnosis. The medical books are usually based on city cases, on people living under bad air conditions.

†Unfortunately the bacteriologist is unable to recover any number of them when spat out, dried and pulverized under the feet. Of the millions and millions of microbes given off by those having purulent affections only a few "show up." Perhaps a culture medium made up of the serum of dust victims would give better results than the usual blood serum.

or fair health, not to speak of robust health, with but little schooling? Who makes the better citizen? Clean schools and clean communities mean much.

We should attempt to distinguish between well-defined specific diseases due to definite causes where the disease-process can be recognized or diagnosed through its causes, and the various states of ill health that can scarcely be considered as diseases (or about which there is the proverbial doctors' disagreement) and the apparently innumerable symptoms, but which can be enumerated. There are all sorts of causes of ill health and of symptoms, or shall we say symptoms of ill health? One common cause, too frequently overlooked, is dusty air. This is most prevalent where the standard of general cleanliness is low. This brings up the question, Shall cleanliness and the influence of environment be taught in the schools? A short course in elementary bacteriology would prove helpful. The young learn readily and remember.

What education is of most worth? All sorts of answers, from all sorts of viewpoints can be given. What is the end sought? What is culture? What is meant by a healthy mind in a healthy body, or a sound mind in a sound body? Many of the world's greatest minds had much ill health!

Spencer, Huxley, Darwin were men with first-class minds, but their biographies are a continued history of ill health, and yet they lived on to old age. They illustrate the old saying, "In order to live long acquire an incurable disease." But we must know what that means. It does not mean disease at all but a reaction to an abnormal environment, usually to bad air. The old chronic in time learns much about his limitations and tries to live within them; some, like Darwin, seek rural isolation.

Some individuals react acutely, they are veritable human barometers. "Every change of the wind" affects them. They seem to be thin-skinned in contrast to the robust who never complain—but who may die suddenly and prematurely on account of having developed a high blood pressure, a reaction common under bad air.

Some children always complain, the school-room is either too hot or too cold. What is a good standard for school-room temperature?*

Why do we want our theatres, hotels, railway stations and cars and even churches overheated? Why do we chill so readily? The dust victim says it is on account of infection in the air.

Many teachers do not react to bad air, they are immunes or seem to be. Fittest to teach in unsanitary schools does not necessarily

*Often it is impossible to regulate, as in our local high school with cold basement rooms in which children freeze, while in the next hour they are in the upper floor assembly with a tropical temperature.

mean best. Children with much ill health drop out of school and do not become teachers. Similar remarks apply to the doctor. Plato, twenty-five hundred years ago, remarked that the best physician is the one whose health is not the best. The "human barometers" who likely could best understand others are weeded out by our unsanitary schools. Much is to be expected from clean air in the common schools and in medical schools.

Perhaps a word should be added regarding medical inspection and medical supervision. The one may be said to form the basis for statistics and as a guide to action; the other seeks to prevent what may in time develop into something incurable. We have a nearby hospital for insane where there is both inspection and supervision, and it is remarkable how much simple cleanliness accomplishes in preventing ills of all kinds. We need inspection and supervision in our schools and in the community. More hospitals is not the remedy for prevalent ills. Education and cleanliness is the remedy.*

From time to time so-called grand systems have arisen; some assumed the form of transient fads. Medicine also has its fads. Old systems of nosology had all the ills, great and small, arranged under classes, orders, genera and species. The most trivial ailments or symptoms were regarded as disease, even teething, a normal physiological process. To-day we fully realize that nature makes transitions and naturalists make divisions. We try to simplify by seeking out causes. As laboratories increase grand systems decrease. The best system of classification is one based on etiology and not on symptoms. Any system of education that neglects the influence of environment will prove a failure. A system that is popular or successful in warm countries with open air schools and outdoor life will fail in the cold North.

Countries and nations pass through stages. Under a military system large families are demanded—that means many soldiers. Then comes the legal system with lawyers in the saddle, there is a constant making and unmaking of laws. (But many so-called freak laws are such because they are in advance of education and public sentiment; laws are not enforced. An anti-spitting law in one nation or state may be normal legislation, in another it is considered freakish and men "demand the right to spit." Perhaps with the advent of woman suffrage there will be a change in public sentiment.) A third stage is approaching, it may be called the scientific stage. The relationship of cause and effect will be studied by experts, by commissions, and the need

*The medical inspector or supervisor should not be a doctor in robust health. Neither should he be a tobacco chewer or smoker, both obscure or blunt the sense of smell. Perhaps the best inspector, the best physician and the best teachers are the human barometers; unfortunately they are weeded out under our present system.

for legislation and for law observance will be made clear. Teach the young, they learn readily and remember.

The dust problem is at present not understood by the people. It is not understood by the average teacher or practitioner of medicine, except the rôle of good air in the prevention and treatment of tuberculosis. The man who above all has learned the lesson of cleanliness is the surgeon. Surgical cleanliness has a definite meaning—the general principles are applicable to the school-room and to the community as a whole.

THE RELATION OF DIPHTHERIA AND SCARLET FEVER TO THE SCHOOL SESSION

BY

E. H. PLACE

Much study and speculation has been given the question of the spread of communicable diseases by the schools. The great increase of these diseases in the fall, about the time of opening the schools and the decrease of incidence in July following their closing, have been held by many as conclusive evidence of school spread. Others have seen in this merely seasonal fluctuation coinciding with school attendance.

Kerr(1) in London and Chapin(2) in Providence have especially thrown doubt on their spread by the schools. Chapin has drawn attention to the fact that the age incidence is highest at about four to five years while if school attendance were responsible, the maximum incidence would be at six years of age or later. Jordan(3) has recently given an interesting review of the question bringing out clearly the lack of facts bearing on this complicated subject.

With the exception of insect-borne diseases, so far as our present knowledge goes, the influence of season on disease spread is produced either through increasing the opportunity of infection largely through contact or food, or by affecting the susceptibility of the host. It is obvious in a city that the tenement districts offer opportunities of infection through contact in the winter much greater than obtains among the same people in the summer season. Crowding and lack of personal hygiene allow free chance for spread of infections. There is much evidence, both experimental and clinical, in diphtheria at least, that local integrity of the mucous membranes has much influence on immunity.

The rigors of our northern climate and the great changes of temperature are reasonably accountable for some of the fall increase through their influence on mucous membranes. Variations in mucous membrane function produced by going from our dry heated indoor air to the cold saturated outdoor atmosphere, and the trauma of sharp particles of dust blown by the wind, may also increase the susceptibility to these diseases. Inflammations of mucous membranes, so common in winter, may increase the probability of infection.

1. Kerr, Report of Med. Officer (Education), London, 1909, p. 63.
2. Chapin, *Am. Jour. Public Hyg.*, 1910, XX, p. 813.
3. Jordan, *Jour. A. M. A.*, 1913, LX, p. 409.
4. D'Ewart, *Med. Officer*, London, Mch. 2, 1912; abs. in *Am. Jour. Pub. Hyg.*, 1912, II, 313.

Chart I. When we turn to the comparison of monthly incidence curves in several cities of the United States (New York, Philadelphia, Boston, St. Louis and New Orleans), we find a surprisingly uniform increase in the fall whether the city is a southern or a northern one. It is hardly clear how such varying seasonable conditions secure such uniform results.

In scarlet fever the correspondence is very close throughout the year for these cities.

Chart II. In diphtheria the increase in the fall is fairly uniform while the spring incidence varies considerably. The small number of cases during the vacation season, however, is fairly uniform.

To contrast with these curves, the cases of scarlet fever and diphtheria admitted to the South Department, Boston City Hospital for five years, 1907-1911, have been analyzed to show the proportion of school cases by months. This includes 4,899 cases of scarlet fever and 7,004 cases of diphtheria.

Charts III and IV. It is seen that the percentage of school cases admitted does not correspond closely with the fluctuation in incidence although there is some increase in the proportion of school cases in the fall.

Chart V. Similar facts are shown by Chart V, taken from Rosenau, which represents the incidence of diphtheria, 1900-1904, for the registration area of the United States, the dotted line being of cases of school age (5-14) and the solid line of those less than school age. The season variation is marked for both, but there is a distinct increase in those of school age in the fall.

It is evident that the fluctuation in occurrence of these diseases is not especially in school children, although there seems to be proportionately a greater increase in school children in the fall.

D'Ewart(4) has shown in Manchester, England, that the child population is reduced 37% in the summer while the reduction in scarlet fever incidence is only 17%, and Kerr(1) points to this vacation absence and to missed cases during the summer acting as carriers on opening the schools.

There is, however, the possibility of school attendance being responsible for increased prevalence, as pointed out by Jordan, without great increase in incidence at school age. It cannot be maintained to-day that the opportunities of infection being inoculated from one person to another are greater in the school than in the home. Much closer and more prolonged contact occurs in the home, especially of the poorer class, than in our public schools. Numerous instances of diphtheria

and scarlet fever being spread in schools, however, are known and there can be no doubt that a single child may carry infection contracted in school and start a neighborhood epidemic involving many cases not of school age. We have known several such instances.

As Jordan says, "The significance of school attendance on the public health side lies not only in the assembling of children in a room but also in the bringing into more or less intimate association a number of children who would otherwise not have met at all."

Further, the class room is not the part of school attendance which has the greatest danger—the intervals of play at recess and the meeting before or after school are most important.

In more highly contagious diseases than scarlet fever and diphtheria, as measles, the school attendance easily can be demonstrated as being the source of many epidemics. Measles may be spread almost as freely from person to person in the school as in the home, which is certainly in distinct contrast to the conditions as to scarlet fever and diphtheria, where closer contact is required.

In 149 families in Boston during the years 1911 to 1913, in which more than one case of scarlet fever or diphtheria occurred within a period of four months, the first case was of school age, 5 to 14, in 96 or 64.4%. In only 53 or 35.6% was the first case not of school age. It would thus seem that the child of school age is responsible for a larger number of family infections than the younger child.

In the families in which the first case was of school age 153 secondary cases occurred, a proportion of 1.59 per family while in the families in which the first case was not of school age, there occurred 65 secondary cases a proportion of 1.22.

It would thus seem that when a school child is taken ill with a contagious disease there is more danger of spreading it to other members of the family, possibly because he has more to do with the family activities than the younger child.

Of the secondary cases the proportion of children of school age was 50.3% in the first series and 49.2% in the second. There appears then but slight difference of susceptibility in those of school age and those younger in this series, under the conditions which occur in the home.

There are many possibilities for error in the study of this problem and dogmatic conclusions are not justifiable.

However it may be said, (1) that evidence is lacking that most of the increased prevalence of scarlet fever and diphtheria during the school term occurs among school children themselves, but the incidence curves suggest some increase among them on opening the schools; (2) that evidence is equally lacking of the *modus operandi* of season in

increasing prevalence, but there is reason to believe that increased opportunity for contact, due to methods of life, etc., and decreased resistance of the host may account for some of it; (3) that these diseases, from our present knowledge of the manner of spread, may be and are known specifically to be contracted in school though less readily than at home and a focus in the school may produce a number of foci from which infection may be spread to many individuals not directly in school contact; (4) that measures for protecting children in the school from these diseases should not be given up, but greater care should be used to early detect these diseases among the school children and exclude carriers by efficient school inspection and following up absentees; (5) that the school problem with that of the general control of these diseases will remain but partly solved, until means of recognition and cure of disease carriers have become practically perfect.

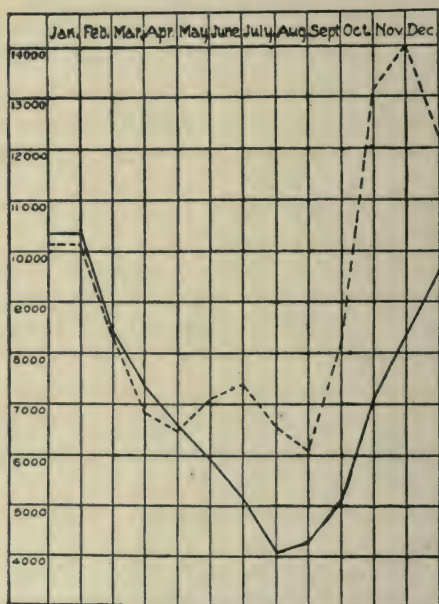


FIGURE 13

Fig. 13, Chart, computed from the United States Census Report to show how the opening of the schools in autumn increases diphtheria.

The broken line shows the number of cases among school children five to fourteen years old during 1900-04 in the registration area of the United States. The unbroken line shows the number of cases among children, from birth to five years of age for same period and area.

On this chart the augmented increase in diphtheria among school children from five to fourteen years of age, as compared with children under five years, is strikingly shown.

PEDICULOSIS CAPITIS AMONG SCHOOL CHILDREN

BY

JACOB SOBEL

In the medical inspection and examination of school children three varieties of pediculosis are encountered, in the following order of frequency—pediculosis of the scalp, pediculosis of the body, or more properly of the clothing, and pediculosis of the eyelids.

There is scarcely a school in any section of a city or town in which some cases of pediculosis capitis will not be found, either in the form of the pediculi themselves or in the form of their forefathers—the nits in various stages of development; and it suffices to say that all public and other schools in every city have their quota in varying degrees of severity and in percentages ranging from 1 to 70.

Those of us who have had to deal with this problem in a city like New York, which, because of its cosmopolitan character harbors a heterogeneous people of different and often contrary ideas as to mode of living, customs, cleanliness, hygiene and sanitation, have tried hard and long to effect ways and means whereby pediculosis capitis, I might almost say nit plague, could be eradicated.

After a study of this perplexing problem from many viewpoints and for many years, and after a practical application of many methods hereafter to be enumerated, much has been accomplished. But we are still far from satisfactory a solution of the situation.

In discussing the various phases of medical inspection a member of our medical corps frankly said to me, "Pediculosis capitis is a dead issue." When one considers, however, that "a single female pediculus will have five thousand descendants in eight weeks," the question appears a real live one. On the other hand, a school principal, not to be outdone by the medical inspector in an opinion of the hopelessness of nit eradication, told me, "The inspector may come and the nurse may go but the nits seem to increase forever."

These statements of inspector and principal are evidence of the magnitude of this problem and show how little encouragement workers in this field receive, despite the enormous energy which they exert for the control of the condition.

The following questions suggest themselves: Why does pediculosis capitis assume so much importance as to require constant and unrelenting efforts for its eradication? Wherein lies the difficulty of con-

trolling this condition? Why have not better results been obtained? Why are so many cases still extant among school children?

It is to a consideration and discussion of these questions that I invite your attention, in the hope that the presentation of our observations may perhaps aid others and with the expectation that the experiences of others will prove of lasting benefit to us.

Pediculosis capitis among school children assumes major importance from several standpoints:

1. *From the Cosmetic Side.* Pediculosis in any form is a dirt disease and as such is a forerunner of illness in its many phases. It is an index of the family's cleanliness, of the parents care and attention, and often of the character of the school child. The presence of pediculi in the home, on members of the family or on the school child may be an accident; their continuance means a disregard for cleanliness and health.

2. *Pediculosis capitis acts as an indirect causative agent of local and general pus infections*, glandular involvements with subsequent supuration and scarring, and possible predisposition to tuberculous adenitis; it often means secondary impetigo contagiosa, dermatitis, furunculosis, eczema, ulceration, folliculitis and plica polonica.

3. *Scalp pediculi are probable carriers of disease.* Though not proven absolutely, the presumption is fair, that the pediculus capitis can and does carry disease, just as the body louse carries typhus, the domestic fly poliomyelitis, typhoid, tuberculosis and dysentery, etc., the flea bubonic plague, the mosquito malaria and yellow fever, the bed bug Kala Azar, relapsing fever and anterior poliomyelitis (Howard and Clark Journal of Experimental Medicine, Vol. XVI, No. 6, 1912), the tick, Rocky Mountain spotted fever. Goldberg and Anderson (Public Health Reports No. 74) state that "the head louse (pediculus capitis) may become infected with typhus, The virus is contained in the body of the infected louse and may be transmitted by subcutaneous injection of the crushed insect and we believe also by its bite." On the other hand Howard and Clark in their investigation with the pediculus capitis as a carrier of anterior poliomyelitis say (The Journal of Experimental Medicine, Vol. XVI, No. 6, 1912) "Lice (pediculus capitis and pediculus vestimenti) have not taken the virus out of the blood of monkeys or maintained it in a living state."

Experiments with head lice are by no means closed and the last word as to their status as carriers of disease has not been spoken.

4. *Pediculosis of the scalp disturbs the general health* by causing itching, restlessness, insomnia, irritability of mind and body and as a result of all this anemia and a general lowering of the body tone.

5. *Pediculosis of the scalp is a transmissible condition* which causes suffering and disease in others and prevents them from following their vocation.

6. *The existence of pediculi on the scalp interferes with the child's education* because of enforced exclusion from school for varying periods.

7. *The presence of pediculosis capitis often interferes seriously with the child's mental equilibrium* in that it subjects him to the taunts of his classmates and in this wise produces a profound nervous depression.

The eradication of pediculosis capitis among school children in New York City is rendered extremely difficult, if not well nigh impossible, largely because of the migratory character of its population. Were our people to remain stationary for any great length of time—a condition which obtains in most of the continental cities and in many of those in the United States—the education of the public would very materially help to control this condition. With us, however, no sooner have we educated the parents and children of one section, no sooner has this condition been controlled there, than these people migrate to another city or to another part of our own city and make way for a second influx of immigration which requires the same systematic education that their predecessors received. And sooner or later it comes to pass that these new comers are affected with "Wanderlust" and in their place comes a third installment of aliens. And so it goes on. The process of education and of clean up is one unbroken chain.

A glance at Chart I will show that for the past four years (1909-1912) the percentage and number of cases of pediculosis capitis among school children has remained substantially the same. In 1909, 1910 and 1911, practically speaking, only the public school children were inspected and while the number of cases of pediculosis capitis as recorded for these years *does include* a small number that were casually seen at other schools on morning inspection, this number is negligible and for practical purposes would not figure in the percentage. In 1912 the parochial and other schools were inspected regularly and systematically and the proportion of cases of pediculosis in the public and other schools is estimated from the registration, the totals being correct.

It will be noted that there has been a gradual decline in the number of cases of pediculosis capitis *excluded* during 1909, 1910 and 1911, namely, 2,014, 1,497, 1,475. Exclusion takes place only when live pediculi are found, when the case is an aggravated one or when persistent neglect of treatment is shown. This table shows, therefore, *a decline in the severity of the cases* if not in numbers. In 1912 the number of exclusions was larger than in any of the previous three years. This is ac-

CHART I

Year	No. of public schools under supervision	Registration of public schools under supervision	No. of cases of pediculosis capitis found	Percentage of pediculosis capitis	No. of cases of pediculosis capitis excluded from school	Percentage of cases excluded	Instructions and treatments
1909	504	674,677	151,585	22.4	2,014	1.32	783,241
1910	506	682,292	153,797	22.5	1,497	0.97	882,907
1911	513	680,905	152,045	22.3	1,475	0.90	859,861
1912*	{ 497 public	691,631	**159,565	23.1	3,368	1.22	1,609,057
	{ 653 156 other	802,837 111,206	184,907 **25,342	23. 22.8			

*During 1912 parochial and other schools were inspected regularly.

**Estimated from registration; totals correct.

counted for by the fact that the more aggravated cases were found in schools than other public, schools which had not received the benefit and advantages of regular school and home inspections and instructions for several years past. It will also be noted that on the average 5-6 instructions and treatments were given to each case.

More important and more striking than any figures or charts can show or words describe, is this improvement in the type of case—the passing I might say of those cases of *pediculus dermatitis* in which the secondary effects of scratching resulted in pronounced scalp and suboccipital dermatitis, impetiginous crusts, moist exudation, glandular enlargements and suppuration, and scalp abscesses. For *this advance* medical inspection of school children is directly responsible.

Chart II shows that during 1909-1912 the number of cases of *pediculosis capitis* remained about the same, whereas the actual number and percentage of other communicable diseases of the eyes, skin and scalp—trachoma, conjunctivitis, ringworm, impetigo, scabies, favus, molluscum contagiosum—declined. Chart III shows the decline from year to year of the communicable diseases of eye, skin and scalp, exclusive of pediculosis capitis, and the practical decline from year to year of exclusions from school because of these conditions.

Why is it that trachoma, conjunctivitis, ringworm, scabies, impetigo, etc., have declined so noticeably, while despite all efforts, pediculosis capitis insofar as numbers and percentage are concerned has remained unchanged?

In the first place, the tenement population is aroused only with the greatest difficulty to the realization that pediculosis capitis is of any consequence as far as health is concerned. Many look upon its presence as of minor importance and tell you that they cannot be "bothered about such a little thing" or that "nits go away without any treatment." In fact a fairly large number consider it a "good omen," a sign of health and strength. Often when you suggest that the hair which is matted, twisted, glued together and filled with crusts, nits, pediculi and pus—the *plica polonica*—be cut short or off, you are confronted with the remark that it must not be disturbed, lest the child's eyesight is weakened or its strength become lost; or you will be told that the secondary dermatitis is good for the child because the poison is coming to the surface and that to cure the condition would "drive the poison in."

These people do not fear contagion from this condition. It would seem rather that a goodly number cater to it, were we to judge by the overcrowding and uncleanness at home, the indiscriminate sleeping together and the common use of toilet articles, such as they are. The contagiousness, the dangers, the unsightliness and the consequences of

CHART II

NEW YORK CITY

RELATION OF NUMBER OF CASES OF PEDICULOSIS CAPITIS FOUND IN PUBLIC SCHOOLS TO THAT OF OTHER COMMUNICABLE DISEASES OF THE SKIN AND EYES

Year	Registration	Total No. of communicable diseases of skin and eyes including P. C.	Total No of P. C.	Total No. of communicable diseases of skin and eyes other than P. C.	Percentage of other communicable diseases of the skin and eyes
1909	674,677	271,970	151,585	120,385	17.8
1910	682,292	217,811	153,797	64,014	9.3
1911	680,905	207,111	152,045	55,066	8.08
1912	802,837*	250,783	$\left. \begin{array}{l} 159,565 \\ 184,907 \end{array} \right\} 25,342$	65,876	8.2

Pediculosis Capitis practically stationary—other communicable diseases of skin and eyes on the decline.

*Includes other schools as well as public.

CHART III
SHOWING THE CONTROL OF COMMUNICABLE DISEASES OF THE SKIN AND EYES EXCLUSIVE OF PEDICULOSIS CAPITIS

Year	Public school registration	Trachoma	Conjunctivitis	Ringworm	Impetigo	Scabies	Favus	Molluscum contagiosum	Total
1909	674,677	45,615 (1,392)	49,807 (1,338)	7,788 (121)	12,516 (250)	4,006 (319)	499 (18)	154 (3)	120,385
1910	682,292	20,915 (498)	26,855 (1,547)	4,508 (190)	9,052 (162)	2,251 (207)	290 (27)	143 (3)	64,014
1911	680,905	15,245 (136)	25,941 (1,137)	4,083 (138)	7,713 (227)	1,768 (215)	220 (33)	96 (0)	55,066
1912	802,837*	14,497 (92)	33,875 (805)	4,108 (79)	10,332 (151)	2,593 (202)	349 (15)	122 (4)	65,876

*Includes other schools as well as public.

Exclusions from school in parenthesis.

other communicable conditions—trachoma, conjunctivitis, scabies, ringworm, impetigo, favus, etc.—appeal to them more directly and they make greater and more prolonged effort to prevent contact of the one person with the other, to avoid the use of the same toilet articles and to procure treatment. They have a respect for these conditions and an indifference for pediculosis capitis which is very striking. Then again the other communicable diseases of the skin and eyes are more or less localized, they can be limited by medication given at the hospital or dispensary, they do not spread rapidly as a rule, treatment is more direct, we have parasiticides which can reach them and with the exception of trachoma treatment is given by the nurse at school.

On the other hand pediculosis capitis is a condition which is not limited and which cannot be treated satisfactorily at the hospital or dispensary or school, as can the other communicable diseases. It requires rather the personal care and attention of the mothers—a care and attention which they are often unable to give because of poverty or unwilling to give because of ignorance, indifference, carelessness and neglect.

In pediculosis capitis the mother pediculus leaves trouble in her trail, by the deposit of 50 or 60 ova weekly, which hatch out in three to eight days and which in turn are capable of reproduction in 18 to 20 days. It is one continuous performance. Verily the female of *this* species is more deadly than the male.

The methods adopted for its control in New York City are as follows:

A class routine examination of every child is made by the inspector in company with the nurse at the beginning of each school term and the name of every pupil with nits or pediculi is recorded by code number on the class index card, together with the date of inspection. This initial routine is followed by a monthly routine of the classrooms by the nurse, or more frequently if indications demand it. Each child passes before the inspector or nurse, the girls raising and separating their hair so as to expose the occipital region. Cases which are more suspicious than others with respect to "live stock," are examined separately in the office *outside of the classroom*. The children recorded on the class cards are re-examined and instructed at regular intervals, individually and in groups, but always outside of the classroom, and circulars of instruction (English, Yiddish or Italian) are given and explained in detail. Girls are instructed to keep their hair braided tightly in school and unbraided and combed daily at home. Consultations with parents at school or in the home are held by the inspector or nurse or both. Exclusion from school takes place only when live pediculi are found, in aggravated cases without live pediculi and when persistent refusal or neglect of treatment is shown. The word pediculosis is never used; several code numbers, 2, 4, 6 and 8, are adopted to signify this condi-

tion and these numbers are used interchangeably for the different children. Every precaution possible is used to guard the finer sensibilities of the individual pupils, particularly in the case of the girls of the upper classes.

It is true that all this has had a great moral and educational effect upon the parents and pupils so far as the severity of the condition is concerned but the number and percentage of cases remains almost the same.

Why not better results? Why so many cases? I hesitate to speak of the drug treatment, for so many drugs have been tried by our corps of nurses and inspectors that to enumerate those untried would be the easier task. Crude petroleum, kerosene, carbonate of soda, delphinium bichloride of mercury, carbolic acid, spirits of camphor, vinegar, alcohol, ether, benzine, carbene, sulphur, mercurial ointments, borax, potash solutions, essential oils (anise, cinnamon), proprietary preparations (Nitin, Nitoff) are a few that have been tried for the various stages of this condition with only fair and often with discouraging results.

DEPARTMENT OF HEALTH

THE CITY OF NEW YORK

DIVISION OF CHILD HYGIENE

INSTRUCTION TO PARENTS ON THE CARE OF CHILDREN'S HAIR AND SCALP

Children affected with vermin of the head are excluded from school. The following directions will cure the condition:—

Mix one-half pint of sweet oil and one-half pint of kerosene oil. Shake the mixture well and saturate the hair with the mixture. Then wrap the head in a large bath towel or rubber cap so that the head is entirely covered; the head must remain covered from six to eight hours.

(Tincture of Larkspur may be used instead of oil mixture. The directions for use are the same.)

After removing the towel, the head should be shampooed as follows:

To two quarts of warm water add one teaspoonful of sodium carbonate. Wet the hair with this solution and then apply castile soap and rub the head thoroughly about ten minutes. Wash the soap out of the hair with repeated washing of clear warm water. Dry the hair thoroughly.

NITS: If the head is shampooed regularly each week as above described, it will cure and prevent the condition of "nits."

Issued by Order of the Board of Health

If pediculosis capitis were only a question of the destruction of the live pediculi, the problem would be comparatively easy, for an application of crude petroleum or kerosene—diluted half with olive oil to prevent dermatitis—usually kills all the live pediculi in twenty-four hours and renders incapable of development those ova which are about to blossom forth as pediculi. It is with the nits that the great obstacle

is encountered. The nits are virtually glued to the hair by a material secreted by the pediculus and for which no one has yet succeeded in finding a good and reliable solvent. But apart from this, the fact remains that no amount and no kind of treatment *at the school* will yield results. *Pediculosis capitis is a problem of the home, for the home, and by the home*; a problem of the child's brothers and sisters, often of the parents and grandparents and frequently of the bedding, the clothing, the towels, the combs, the brush, and other household utensils.

It is a common experience to have a child "cleaned up" at the school by the nurse, only to return home, and become reinfected by other members of the family.

In an investigation of the home conditions of 161 families in which the school child had pediculosis capitis I found (Chart X) that the general condition of the home, of the bedding and of the clothing was filthy in 87 cases, dirty in 29 cases, fair in 23 cases and clean in 22 cases. In about one-third of the cases (56 out of 161) which could be examined satisfactorily at home, the mother, the grandmother or other children had pediculosis of the scalp. In several instances the conditions were described as "horrible," "alive with lice." In a fair proportion of cases—30%-40%—pediculi were found on the bedding; while overcrowding during sleep, that is, one or two beds or one bed and a couch or an improvised bed made out of two chairs, often in one or two rooms for the use of four to six or seven members of the family, was very common—60%-70%. Ofttimes it was found that the mother was working because the father was dead or had deserted the family, and the children were thus thrown upon their own resources for head cleanliness.

CHART X

HOME CONDITIONS

WHITE CHILDREN			COLORED CHILDREN		
	Children with Pediculosis Capitis	Children Free from Pedicu- losis Capitis		Children with Pediculosis Capitis	Children Free from Pedicu- losis Capitis
	161 Homes	60 Homes		13 Homes	27 Homes
Filthy.....	87	0	Filthy.....	0	0
Dirty.....	29	6	Dirty.....	7	1
Fair.....	23	12	Fair.....	2	2
Clean.....	22	34	Clean.....	4	22
Very clean...	0	8	Very clean...	0	2

The use of the common family comb, brush, towel and wash cloth as channels of conveyance could easily be ascertained. Even that mighty weapon for removing nits—the fine-toothed comb—was frequently old, broken, filthy, “just lost” or they “couldn’t find it.” Many times it seemed as if the mother did not want to learn, for it was a common observation that many mothers used a dash of kerosene in some cold water as a head wash, feeling that this was the proper and only necessary procedure. Many mothers were too lazy or too indifferent to look after the heads of the children. This was especially noticeable with the older girls whom the mothers frequently told to look after themselves; the result was that the younger children who were taken care of by the mothers were found to be cleaner than the older girls who often neglected to attend to their scalp properly.

What therefore can one hope to accomplish with the school child *per se* when it is exposed day in and day out to home reinfection. We have had many mothers’ meetings to emphasize this question but I am convinced more than ever that group teaching in this matter is not and never will be a success and that what is required is *individual personal instruction in the home* by the nurse and a practical demonstration by her of the ways in which the disease spreads and the manner in which it can be prevented and cured. The parents must be shown that for mutual protection it is necessary to look after not only the school child but after all members of the family, all the bedding, articles of clothing, furniture and toilet articles. In truth, unless we can reach and destroy the pediculus soon after it alights on the head of the child the task is almost a hopeless one. The pediculus capitis recognizes no social distinction. Rank offers no protection. Therefore *every parent* should examine and comb carefully and thoroughly the heads of all the school children before they retire at night and try to discover, remove and destroy the pediculus *before the ova are deposited*.

In an investigation of home conditions of 60 families in which the school child was free from pediculous capitis (Chart X) the following facts were ascertainable:

Dirty in 6 cases, fair in 12, clean in 34 and very clean in 8.

It has seemed to me that with the large number of cases on hand we have unwittingly and unconsciously spent too much time and energy in an effort at eradication in the school. We have “swatted” or tried to “swat” the pediculus and nit in the school instead of beginning at the other and proper end by “swatting” and treating the breeding place—the home. I do not know but what a more fitting title for my paper would have been “Pediculosis Capitis in the Homes of School Children.”

The treatment of any individual school child or any number of school children is insignificant when compared with the treatment of the home

CHART IX

PEDICULOSIS CAPITIS AMONG COLORED SCHOOL CHILDREN

School	Class of Pupils	Register	No. of colored	No. of whites	Total No. of cases of pediculosis capitis	INFECTED PUPILS				Character of hair in colored
						No. in colored	No. in white	% in colored	% in white	
89	Boys and girls.....	1,738	1,074	664	47	3	44	0.33	7	1 kinky; 2 straight
28	" ".....	1,175	130	1,045	201	0	201	0	19.2	.....
100	" ".....	506	253	253	64	2	62	0.80	24.5	2 kinky
51	" ".....	1,673	14*	1,659	113	0	113	0	6.7	.....
119	" ".....	2,065	723	1,342	101	3	98	0.40	7.5	3 straight; 0 kinky
48	" ".....	517	60**	457	95	0	95	0	21	.....
30	" ".....	1,685	62	1,623	74	1	73	0.13	4.5	1 curly; not kinky
150	" ".....	2,339	37	2,302	362	2	360	0.54	15.6	2 rather straight
151	" ".....	1,555	5	1,550	202	0	202	0	13	.....
86	" ".....	2,168	47	2,121	423	0	423	0	19.9	.....
121	" ".....	2,173	21	2,152	415	0	415	0	19.2	.....
171	" ".....	3,232	31	3,201	710	0	710	0	22.1	.....
6	" ".....	1,507	24	1,483	86	0	86	0	5.7	.....
37	" ".....	1,511	17	1,494	52	0	52	0	3.4	.....
72	" ".....	2,045	15	2,030	1,010	0	1,010	0	49.7	.....
109	" ".....	2,902	66	2,836	398	2	396	0.30	13.9	2 curly; not kinky
		28,791	2,579	26,212	4,353	13	4,340	0.50	16.5	3 kinky 10 straight

*13 had kinky hair; 1 straight hair.

**54 had kinky hair; 6 straight hair.

—infected parents, infected brothers and sisters, infected bedding, clothing, toilet articles, et al. And to accomplish results we must show the parents the way. We must show them that local medication of all kinds is far more difficult and far more thankless than they are led to believe; that the greatest hope lies in prevention and that the entire family and the home must be looked upon as a unit insofar as cleanliness is concerned.

In New York City one of the most interesting observations has been the relative freedom of the colored school children from pediculosis capitis. In some schools where the majority or a large proportion of the pupils is colored, the number of cases of pediculosis capitis among them can often be counted easily on one or both hands. Chart IX shows that of 28,791 children in 16 public schools, 2,579 were colored and 26,212 were white and that of this number 13 cases of pediculosis capitis were found in the colored children and 4,340 cases in the white, a percentage of 0.5 in the colored as against 16.5 in the white. I will not say that this is due *entirely* to better home conditions although in my experience the homes of the colored population *as a class* are more cleanly than those of the majority of our alien population.

In the homes of 27 colored school children in whom no pediculosis capitis was present, the conditions were (Chart X) as follows: Dirty, 1, fair 2, clean 22, very clean 2. Of these 25 children all except three had kinky hair. In the homes of 13 colored children in whom pediculosis capitis was present, the conditions were (Chart X) as follows: Dirty 7, fair 2, clean 4. In three cases it was noted that "the mother is almost white and has straight brown hair" and "the children have long curly hair, not kinky."

I have been forced to look for other reasons for this infrequency. It has seemed to me that many colored mothers realize that the color of their children is in itself a handicap to their school progress, because of aversion in some quarters to their race, and that under the best circumstances their children are apt to be laughed at and teased. It is more than likely therefore that they exert an unusual effort to prevent the occurrence of pediculosis by examining and combing the hair of the children daily and thus spare them the burden of further annoyance. On the other hand it may be that the color of the scalp or the odor of the skin, that is, the sebaceous glands, is disagreeable to or as Fox puts it, "Has a discouraging effect upon" the fastidious pediculus or that the crispiness of the hair does not permit the glutinous material of the ova to cling fast to it. Or it may be that the custom of the girls to keep the hair tightly braided and frequently combed in order to straighten it prevents the pediculi from finding a suitable lodging place.

Dr. W. L. Funkhouser of Rome, Georgia, wrote to me: "In reply to

your letter of recent date will say that I too have been interested to know why I found so little pediculosis among the colored children. I have about 800 colored and 1,800 white; during the past month I excluded 33 white and not a single colored child. The colored principals and teachers tell me that they very rarely have seen any in the colored children. I have talked to some of the old slaves. They say that long ago it looked like the 'niggers heads breeded 'em,' and gave as their reason, the effort to-day to straighten the hair. I found on query that fully one-half used some preparation of some kind on their hair and spent much time combing. They will neglect their bodies for their hair."

Dr. Howard Fox, in his study of skin diseases in the negro, says, "Dr. Carmichael informs me that the negro women in Virginia take a special pride in keeping their heads and those of their children free from lice. Dr. Pendergast, of Memphis, suggests that negro women unconsciously and of necessity employ one of the methods of treating pediculosis, namely the fine tooth comb."

To me the thought that lies nearest is this; that the main reason for the infrequency among colored children is the great desire to get rid of the "kinks" and that therefore the parents and children are forever and anon combing their hair. It seems that they would rather be unwashed than uncombed, and as a result of this constant combing, the pediculus is not given an opportunity to open headquarters and rear a large family. Conversely this also explains why pediculosis capitis is more common among negroes with straight or curly hair. In these cases the quest for hair like the whites having been attained, the need for frequent combing exists no longer; the pediculi find a comfortable habitat and are undisturbed long enough to deposit and hatch out ova.

Whatever the explanation the fact remains that in colored school children the occurrence of pediculosis capitis is very rare and that in this race cases occur more frequently in those children with the softer varieties of hair or straight hair than in those with the "kinky" brand and in those who have "white mothers" or "mothers almost white."

But the inspector and nurse are not the only ones who should give individual instruction to the parents. Their hands should be upheld by the principals and teachers. This may take up a little time but it will prove well worth the while, for it is surprising to see what regard many parents have for the advice and authority of the principal. That the influence of the immediate school authorities has a pronounced and direct influence upon this condition may be seen from Chart IV, in which are listed various schools harboring the same type of children in practically the same section of the city, with similar home surroundings and in which the coöperation of the principal is good or poor.

In the schools noted the nurses and inspectors are practically of equal

Good Coöperation
of
School Authorities

CHART IV
POORER SECTIONS
ROUTINE CLASSROOM EXAMINATIONS
FEBRUARY, 1913

Fair to Poor Coöperation
of
School Authorities

BOYS AND GIRLS				BOYS AND GIRLS			
School*	Number Examined	Number of Cases of Pediculosis Capitis	Percentage	School	Number Examined	Number of Cases of Pediculosis Capitis	Percentage
A.	1,203	41	3½	K.	2,097	1,035	50
B.	1,007	53	5	L.	2,133	758	35
C.	2,034	98	5	M.	908	283	30
D.	2,664	164	6	N.	1,819	570	31
E.	2,461	146	6	O.	390	102	26
F.	3,274	238	7	P.	2,199	438	20
G.	2,123	172	8	Q.	1,398	287	20
H.	2,668	227	9	R.	340	60	17
I.	1,150	102	9	S.	1,633	263	16
J.	2,298	225	10	T.	2,098	271	13
EXCEPTIONS							
U.	2,076	786	38	W.	1,137	89	8
V.	1,693	913	54	X.	2,007	219	11

*Letters used arbitrarily.

CHART V

BETTER SECTIONS
ROUTINE CLASSROOM EXAMINATIONS
FEBRUARY, 1913

Good Coöperation of School Authorities

Fair to Poor Coöperation of School Authorities

School*	BOYS AND GIRLS				BOYS AND GIRLS		
	Number Examined	Number of Cases of Pediculosis Capitis	Percentage	School	Number Examined	Number of Cases of Pediculosis Capitis	Percentage
AA	2,036	19	1	FF	1,538	29	2
BB	1,748	14	1	GG	1,029	51	5
CC	3,000	89	3	HH	1,796	100	6
DD	1,374	54	4	II	1,392	82	6
EE	798	29	4	JJ	1,420	121	8½

Better Home Conditions
 Better Social Status
 Better Financial Status

Require } Less Coöperation on Part of School Authorities.

*Letters used arbitrarily.

CHART VI

ALL SECTIONS
ROUTINE CLASSROOM EXAMINATIONS
FEBRUARY, 1913

BOYS ONLY				GIRLS ONLY		
School	Number Examined	Number of Cases of Pediculosis Capitis	Percentage	School	Number Examined	Number of Cases of Pediculosis Capitis
40	1,023	16	1½	78	2,833	792
24	1,295	24	2	45	531	96
37	1,400	23	1½	36	1,402	157
83	2,442	58	2½	72	1,736	177
79	1,388	70	5½	50	1,125	121
109	2,155	134	6	39	2,616	267
						Percentage
						28
						18
						11
						10
						10
						10

calibre and the methods of examination and interpretation of the findings are substantially the same.

I do not want to convey the impression that exceptions to this do not occur and that many other factors must not be taken into consideration. But the relation between school coöperation and the percentage of pediculosis capitis is striking enough to warrant attention. Chart VI shows the well-known fact that pediculosis capitis is more common among girls. I have frequently used this as an argument to awaken an increased pride in the girls of the school by asking them if they were going to have the boys outdo them in cleanliness.

At some of our schools in addition to the instruction and advice of the inspector and nurse, personal hygiene of the mouth, eyes, scalp, body, shoes and clothing is taught and controlled systematically by means of daily classroom inspection and daily drills conducted by the teacher and supplemented by a monitor or captain for each class. In addition to this the principals interview not only the pupils but the parents as well and impress upon them the need and importance of cleanliness. These exercises or drills stimulate in pupils lessons of personal and household cleanliness, lessons which they bring into their homes and help to have carried out. These exercises are furthermore controlled by the use of separate charts (Chart VII) for cleanliness of the various parts of the body—face, arms, neck, hands, nails—and for the various articles of clothing—shoes, jackets, waists, etc. This method

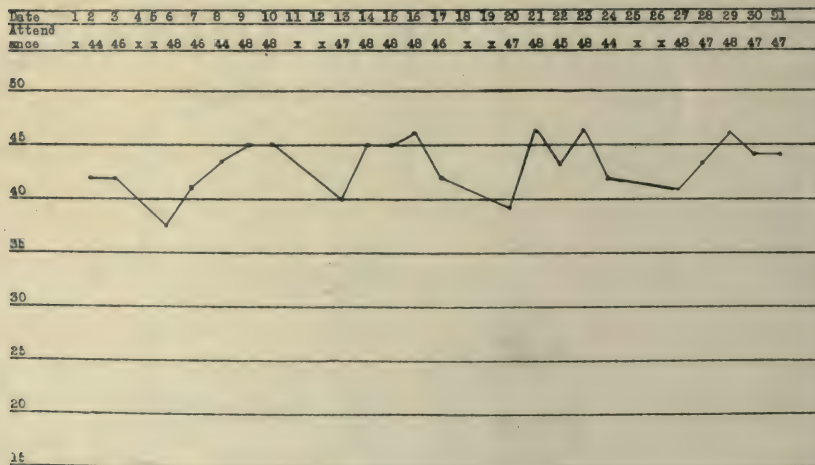
CHART VII

P.S. A
Class Register 48

CLEANLINESS

CLASS 6 A
Room 100

Face Neck Hands



this stimulus to keep clean, has reduced in several of the schools not only the number of cases of pediculosis capitis but also the number of other communicable diseases of the skin, scalp and eyes. Thus the idea, the thought of cleanliness is kept constantly before the pupils and where cleanliness reigns, pediculosis will eventually cease to exist.

These charts also serve to show what systematization means in any school and how despite the talk in some quarters that medical inspection of school children interferences with the regular routine of school work, great deal can be done by the interested coöperation of the principal. I venture to suggest and advocate that we have charts in each classroom to tally the number of cases of pediculosis capitis, under the caption "Clean Scalp" (Chart VIII). As each routine inspection of the classroom is made by the inspector or nurse, whether it be weekly or monthly, the number of clean heads and the attendance should be noted and the curve of clean scalps for each class thus formed.

CHART VIII

P.S. A

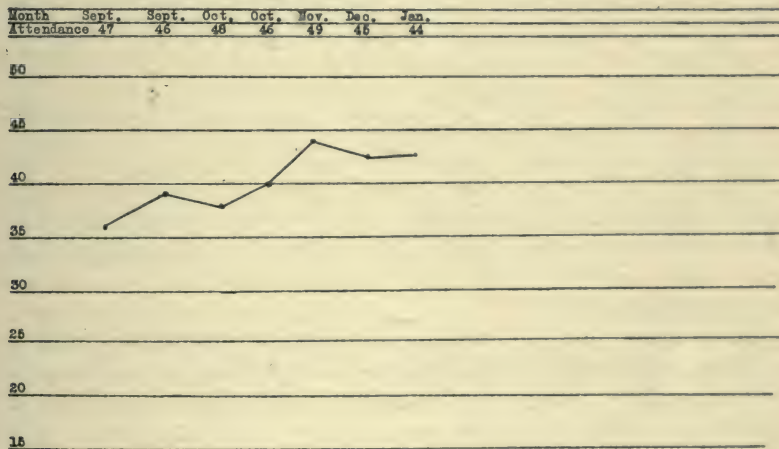
Class Register 50

C L E A N S C A L P

First Term 1912

Class 41

Room 200



It may be criticised that displays of this kind are too public and that they will expose the affected pupils to ostracism at the hands of their classmates. I believe this to be exaggerated. They do not and will not single out any particular child. They will simply establish the head cleanliness of the class *as a whole*. They will tend to offer an impetus not only to the clean pupils, who for the record of the class will strive to

keep that way, but they will have an effect upon the guilty ones to a degree which cannot be overestimated.

And if for the sake of an argument we concede that these charts would make the child "feel ashamed" or "afraid of being picked out," if they would be the means of making him "clean up" then surely these are the best arguments for their adoption. The common sense view of the matter is that pediculosis capitis is a public danger and as such needs a public warning, "and the more public the place the more effective the warning."

Cases of direct school infection are relatively uncommon. Where pupils come in close contact during play, or where head to head contact takes place, the migration of the live pediculus does occur. Infection via the clothing, especially head gear, is more common and occurs more frequently with girls than with boys. The latter keep their hats or caps either in their coat pockets or in their desks, while the hats, capes and cloaks of the girls are kept closely together in one closet, usually dark and poorly ventilated. Much could be done in a preventative way at school by providing separate lockers, or by having separate hooks, bags or other compartments for the hats and cloaks of the girls. If separate bags for all girl pupils are considered too radical or too expensive, let us have them at least for those pupils known to be infected. In schools where girls are adept at sewing these could be easily provided.

One word as to actual treatment. The destruction of the pediculus is relatively simple. When nits are numerous local medication is a thankless task. With boys the problem offers few difficulties, for clipping of the hair gives the easiest, most rapid and most satisfactory results and no opposition as a rule will be offered. With girls, however, clipping of the hair should be the last resort. They resent any such interference. All girls should have their hair braided tightly in the classroom and unbraided and combed at home every night for inspection, for care and for treatment.

After many years of experimentation with any number of drugs I am of the opinion that there is but one successful way of removing the nits—other than cutting the hair—and that is by mechanical means. Patient, persistent, painstaking removal of the nits strand by strand, with the hand, sandpaper or a fine-toothed comb, is the only successful plan for pronounced cases. The various drugs may loosen a few nits but the majority will succumb only to *forcible eviction*. This is something that must be *taught, explained and shown* to the parent.

The conclusions which have been forced upon me as a result of some eleven years of personal observation and experience with pediculosis capitis among school children are as follows:

1. The severity of the cases and the number of children excluded from school have been materially influenced for the better, by the methods used—morning inspection, periodic classroom examination, individual and group instructions of pupils at school, braiding of hair at school and unbraiding at home, consultation with parents at school and at home, practical demonstrations in the home, exclusion of children with live pediculi, aggravated cases and those which persistently refuse treatment, cooperation of principals and teachers, mothers' meetings, distribution and explanation of circulars of information, and instruction in personal and home hygiene and cleanliness.

2. Pediculosis capitis is of importance from the standpoint of general cleanliness, disturbance of the general health, transmissibility of disease, interference with school attendance, production of secondary infections and lowering of the child's mental equilibrium.

3. The more stationary and the more homogeneous the population and the less the influx of immigration, the easier and the more successful the control of this condition.

4. While the number of other communicable diseases of the scalp, skin and eyes has gradually diminished from year to year, the number and percentage of cases of pediculosis have practically remained stationary. This is accounted for by the fact that the tenement population consider pediculosis of little import, not dangerous and frequently a sign of good health; while they fear the other forms of contagion and take all precautions to prevent their spread and to effect their prompt cure. The other communicable scalp, skin and eye diseases are frequently treated and controlled at the school and are more localized and more readily accessible and responsive to treatment.

5. Treatment of the school child *alone* is of little value in the control of pediculosis capitis. Other members of the family, the clothing, bedding, combs, brushes, towels, washcloths, etc., must be kept clean. The solution of the problem is the home. The school is but a means to an end.

6. Unfavorable home conditions are often the result of poverty *per se.*; quite as frequently they are due to carelessness, indifference, ignorance, irresponsibility and neglect.

7. The destruction of the pediculus is relatively easy. The eradication of the nits by local medication is unsuccessful. Removal of nits is accomplished best by mechanical means.

8. Personal individual instruction of the mother in the home by the nurse and practical demonstrations by her as to prevention and treatment are the means which assure success. Mothers must be taught to look after the older school girls as well as the younger members of the family. The common family brush and comb must be discontinued and the nurse must show parents the dangers of their use and the method of transmissibility by this and other channels.

9. Instructions *per se* even if printed in the mother tongue of the people are useless. These must be supplemented by personal instruction. Circulars printed in English are of greater value, because they are read and explained by the school child—the messenger of education for most of the households.

10. The coöperation of the principals, teachers and of the pupils is essential to success. Individual advice to pupils and mothers, practical lessons and drills in personal hygiene, the use of charts in order to ascertain the status of and to inspire the thought of cleanliness in the pupils of the class, have an effect which is difficult to over estimate.

11. In schools situated in the poorer sections of the city, where home conditions of the pupils are the same and where both boys and girls attend, the percentage of pediculosis capitis in those schools wherein the coöperation is good is less than in those wherein the coöperation is poor.

12. In the schools of the better sections of the city where boys and girls attend, the percentage of pediculosis capitis is far less than in the poorer sections irrespective of the coöperation of the school authorities, because of improved home surroundings and better financial circumstances. School coöperation here is almost an inconsequential factor.

13. The percentage of pediculosis capitis in schools harboring boys *only* is less than in those harboring girls only.

14. Better facilities should be provided at the schools for a separation of the clothing and head gear of the pupils, especially that of the girls. Separate lockers, hooks, bags or other containers should be installed, at least for cases known to be infected.

15. Prevention of the condition is easier than its cure. Education will accomplish what drugs have failed to do.

16. The prejudices and superstitions surrounding this condition must not be laughed and scoffed at by school inspectors or nurses. This method will never win over the mother.

17. The dangers of general infection, of loss of hair, of diseases of the scalp, of infected glands with resulting scars and deformity, of predisposition to tuberculous glands—in a word all the dangers of the condition must be brought home to the parents in a quiet and confiding yet impressive and firm way. Give them something to think about and show them that the condition is not one to make light of at any time.

18. Pediculosis capitis is very infrequent among the colored school children of New York City. It occurs with greater frequency among those with soft straight hair than in those with the kinky variety and among those children born of white mothers or light colored negroes. This infrequency, in my opinion, is due in large measure to the constant combing to which this race subjects the hair in order to straighten the kinks.

19. And finally, with apologies to Owen Meredith:

You may talk about poetry, music and art,
 You may talk about conscience and talk about heart,
 You may talk about knowledge and talk about wit,
 The bane of inspection is the ubiquitous NIT.

INTESTINAL PARASITES—THE RURAL SCHOOL A FACTOR IN SPREADING THEIR INFECTION

BY

JOHN A. FERRELL

General Considerations of Intestinal Parasites. Infection by intestinal parasites is world wide in its distribution. It is most prevalent in the tropical and semi-tropical countries, where it is a problem of great magnitude. As a factor affecting the life and the health of the people; their physical and mental development; and their material welfare, its importance has not been generally appreciated. In fact, it has not been particularly emphasized by many of our medical colleges and of course not by the physicians they graduated. Yet in the light of the revelations made during the past three or four years by the Rockefeller Sanitary Commission, working in conjunction with Boards of Health of eleven Southern states, there should be great reform generally in the methods for acquainting both the students of medicine, and the laity as well, with the essential facts pertaining to this form of infection.

Types of Parasites. During the three and one-half years prior to July 1, 1913, the health agencies above referred to have made 665,581 microscopic examinations of specimens of feces for parasitic ova for 665,581 persons, and of these 329,578 were found to have hookworm infection and were treated. Private physicians have treated and reported 162,305 additional persons, giving, with those treated by the health agencies, a total of 491,833 treated persons. The hookworm is by far the most common and most important of the intestinal parasites. In 326 counties of the South, infection surveys for hookworm disease have been made. Each survey is based on the microscopic examination of a minimum of 200 country children taken at random, ages six and eighteen years, inclusive. These surveys indicate that in different counties, varying with their geographical location, the hookworm infection ranges from one per cent. to as high as eighty or ninety per cent. of those examined. Practically all the examinations were made in the field in the campaign waged primarily against hookworm disease and accurate records were usually not kept of the other infections found.

In seven states, however, 46,794 of the examinations were made in

central laboratories and record was made of all infections found with the results shown in the following table:

	Geor- gia	Ken- tucky	Miss.	N. Car.	Tenn.	Texas	Va.	Total	Per- cent- age
Examined.....	4,305	3,106	1,600	149,876	1,504	834	5,569	46,794	..
Hookworm inspec- tion.....	1,879	10,356	493	8,055	272	160	1,569	22,782	48%
Round worm or as- cario lumbricoi- des.....	39	7,225	8	1,630	89	15	775	7,991	20%
Whip worm or tri- chocephalus dis- pas.....	2	2,546	..	360	97	10	..	2,915	6%
Dwarf tapeworm or hymenolepis nand.....	..	626	20	583	10	7	..	1,246	2%
Strongyloides.....	..	..	5	125	..	4	..	134	.02%
Seat worm or Ex- yuris vermiculario	5	..	2	22	17	..	..	46	.009%

NOTE.—A number of cases of beef tape worm or *T. Saginata* were found, but these were least numerous.

This ratio will not hold good, of course, for all countries for the relative prevalence of the various parasites, but will convey a general idea as to what may be expected. In Kentucky, for example, the round worm seems to be much more prevalent than in North Carolina.

Infection Not Confined to Southern States. The work done in the South merely affords a general index to the prevalence of parasitic intestinal infection as a world problem. Dr. Wickliffe Rose, now Director of the International Health Commission, made thorough governmental and other agencies an international survey for hookworm disease and reports that: "Hookworm infection belts the earth in a zone about 66° wide, extending from parallel 36° North to parallel 30° South; practically all countries lying between these two parallels are infected."

The work done in Porto Rico after the close of the Spanish-American war was splendid, reaching something like 300,000 infected persons. The records of the Porto Rico Anemia Commission there indicates that hookworm infection in Porto Rico was a greater menace to life and health and of greater severity than has been found in the United States. Active measures should be taken by every country in the infected belt to make an accurate survey to determine the extent of the infection and to have work begun looking to the prevention and cure of the infection. Now that the International Health Commission has been created through the munificence of Mr. John D. Rockefeller, assistance can probably be had through its director, Dr. Wickliffe Rose, of Washington, D. C.

The Effects of Intestinal Parasites. Intestinal parasites exert harmful influences on their hosts the extent of which can not always be estimated. The whip worm, for example, is supposed to produce little harm other than that due to local irritation to the bowel and to absorption by the body of excrementitious products from the worms, whereas the hookworm is a foe of the worst type. It is a blood sucker causing much damage to the intestine, and produces severe anemia, lowered vitality, stunted physical and mental development, sickness, and not infrequently is a direct cause of death. As an indirect cause of death, the hookworm probably has no equal.

In many localities eighty to one hundred per cent. of the school children have been found to have the disease and to have made only fifty per cent. or less progress than is made by normal healthy children. In other localities, entire families heavily infected have had their systems so undermined that they were swept away completely, either directly by hookworm disease or by intercurrent diseases like tuberculosis, pneumonia or typhoid fever which easily overwhelm the devitalized bodies of hookworm subjects. Routine examinations for a series of graded schools have shown hookworm infection three times more prevalent in the backward sections than in the advance sections for the various grades. The three annual reports of the Rockefeller Sanitary Commission contain numerous photographs and accounts in greater detail showing the effects of hookworm disease. These can be had free on request to the Rockefeller Sanitary Commission at Washington, D. C. The other intestinal infections are spread by the same unsanitary methods of living which favor the spread of hookworm disease, and in some localities where hookworm disease happens to be scarce the stomach worm and dwarf tape worm are found in abundance and the health of those infected is greatly impaired.

Methods by Which Infection is Spread. Each kind of parasite germi-

nates from an ova or egg and excepting the strongyloides and one or two others, the egg will not hatch until it has been expelled from the intestinal canal along with the excreta. For a person to become infected, it is necessary that the larvæ or worms developing from the eggs find entrance to the intestinal canal. This is usually effected by eating food which has become contaminated by human excreta. In the case of hookworm infection entrance may also be gained by the larvæ through the skin. In fact, this method of infection is far more frequent than is infection through the mouth.

In every case the infection spreads just in proportion to the care taken in disposing of night soil. In cities and towns where all the people use water works and sewerage systems regularly, intestinal infection is exceedingly rare. In the country districts where no sanitary measures are taken for the disposal of night soil, we find in some sections that as many as fifty per cent. of the families do not have even the poorly constructed open closets, and in fully seventy-five per cent of cases the men and boys do not use any kind of a privy. In such localities only unusual precautions will protect a person from infection once it has gained entrance into the community. And to be sure, it is almost inevitably going to be carried to every community either by newcomers or visitors.

The school in the rural sections affords the greatest medium for the spread of the infection. Suppose we take a certain school district in which by chance no infection exists. Now let the son and daughter of Mr. Smith visit Mr. Jones, who lives in a district where there is much hookworm disease. While there fruit or strawberries are picked up off the ground by the Smiths and eaten, and perhaps in going barefooted "ground itch," the beginning of skin infection is contracted. The visit over, the Smiths return home. Having no sanitary privy on their premises, the soil around their house is soon polluted so that one by one the whole Smith family become infected in varying degrees of severity. Fall comes and the neighborhood school opens. The Smith children may by this time be a little pale and puny from the disease, but they start to school.

The school may be in a progressive community, the house may be painted and furnished with patent desks, and perhaps it has secured a creditable library. Good heaters have been provided, the light comes from the rear and over the left shoulders of the pupils. Perhaps there is a driven well to supply water, but there will be no individual drinking cups, but this is not the worst of it. The need of nothing else has been felt. It is true no privy has been provided, but why should there be. The pupils, not having one at home, do not think of having one at school, especially since the woods and undergrowth is near the school house.

The girls, by custom, conceal themselves when answering nature's call as nearly as possible in the woods on the east side and the boys on the west. The Smith children do not know they are infected. They use the common hiding grounds along with the other children. Soon the whole school grounds are so heavily polluted that on damp days every pupil who goes around barefooted will contract "ground itch;" and moreover those who play ball, marbles, mumble peg, etc., get their hands infected. Facilities for washing the hands are not available, so at lunch time they handle their food with soiled hands which are likely to be contaminated. In this way the pupils at school become infected with the school as an exchange. In a comparatively short time the premises around the homes of all the school children are polluted and you have a change which anemia produces coming over the community. Progress of the children in the school is retarded; the daily attendance is poor; the health of the community is below normal, the crops are not so well cultivated and there is a general backward tendency. The houses are not so well provided for or kept. The whole community is sick and doesn't know it. The economic loss is tremendous. Failure or delay in establishing control of infection spread by filthy habits is criminal once the facts are understood. The appalling situation is that the masses are ignorant of the facts. Teaching them is a duty of every informed citizen, board of health and physician, yet these agencies are not sufficient to reach the masses.

The common schools, through the school children, can reach practically every home. Hence, an important part of this work should be directed to the teaching of sanitation, dealing particularly with parasitic intestinal infection and other infections spread by soil pollution. The school should be an institution where methods are taught for saving and preserving the child, a healthy educatable child, one who will bless the state with the highest type of citizenship. May we not hasten a reform which will make the school a place where the teachings of sanitation are put into practice and not a center for exchanging and spreading all kinds of filth borne diseases.

DISEASE CARRIERS AMONG SCHOOL CHILDREN

BY

EDWIN O. JORDAN

More favorable opportunities for the dissemination of infectious disease could hardly be devised than those afforded by the school. In the average schoolroom from thirty to fifty or more children are kept for some hours each day under conditions involving fairly close personal contact with a considerable number of their fellows. Two factors accentuate the danger of infection: first, the relatively high susceptibility of children as compared with adults; second, the unconventional habits of many children with respect to care of fingers, mouth, and nose. If a child enters the schoolroom bearing the germs of disease, it is relatively easy for the spark of contagion to be communicated to the highly inflammable material there gathered.

All that is known about the modes of transference of disease strengthens the opinion that more or less close association of living human beings is one of the chief agencies in spreading infection. Transfer of disease for any considerable distance through the air, or by the agency of lifeless objects seems to be relatively uncommon. When the germ of Asiatic cholera enters the United States, it is not in clouds of microbes blown across the Atlantic, rarely if ever in infected rags or clothing, but as a rule in the bodies of human travelers who may or may not display symptoms of the specific malady. In most infectious diseases the trend of discovery has been towards emphasizing the importance of the living human disease carrier as contrasted with inanimate objects.

It is true that the schools have for long enforced regulations which constitute a partial recognition of these facts. Children known to be ill of certain diseases are in general promptly excluded from the school. Even after recovery has set in, a period of quarantine is usually exacted before the child is readmitted. In some diseases, however, in which the symptoms are not acute, or in some localities where the popular fear of particular diseases is not great, little or no restriction of the disease carrier is practiced. Children or teachers ill with pulmonary tuberculosis are in some cases allowed, knowingly or unknowingly, to mingle with the healthy. Children suffering from whooping-cough are allowed to attend school in at least three cities in this country.* Such neglect of frank or manifest cases of disease, however, is coming

*Morse, Jour. Amer. Med. Assn., 1913, 60, p. 1677.

to be quite exceptional, and the greatest danger from disease carriers, at the present time, is not from this source.

The precise length of quarantine to be required before a convalescent child can be safely readmitted to school has given and still gives a good deal of concern to public health officials. Before the days of bacteriology the period during which an individual convalescent might continue to be infectious was purely conjectural, and the length of quarantine, then enforced was based roughly on experience as to what had usually happened when convalescents had been allowed to go about among the susceptible. Even now diphtheria is practically the only common disease of school children in which we can assure ourselves by bacterial examination that the convalescent child no longer harbors the germ of the specific infection. We cannot be certain that in exceptional cases a child may not continue to carry the germ of certain diseases such as scarlet fever or whooping-cough beyond the conventional isolation period. One result of this uncertainty has been to incline public health authorities to lengthen the time of quarantine for some diseases to a point probably far in excess of the actual necessities. While the wish to "take no chances" and to "be on the safe side" is a laudable one it must be remembered that the aggregate inconvenience and loss of time to the community from quarantine restrictions is at present large and should be reduced as far as practicable. The duration of the necessary isolation period in certain diseases needs careful and detailed study. Present regulations are based to a considerable extent upon unverified tradition. A beginning has been made in the right direction by the fine work of Anderson upon measles, where it is shown that in monkeys the disease is rarely transmissible from one animal to another after the febrile stage has passed. It has been the custom in many places for the health authorities to require a quarantine of 21 days after the onset of measles. This is probably much longer than necessary. From my own observations I believe that a careful study of the epidemiology of measles would give results wholly in accord with Anderson's experimental work. There seems to be no trustworthy evidence, experimental or epidemiological, that measles can be conveyed by a convalescent patient for more than a brief period after the eruption.

Altho it is true that in most cases the conventional period of quarantine is long enough, even over long, to meet the actual requirements for exclusion of convalescent disease carriers from the schools, it must not be forgotten that there are still more insidious sources of danger to reckon with. The unrecognized cases and the healthy germ-carrier offer serious problems to the school authorities.

Unrecognized cases of the ordinary infections of childhood are fairly common. Most infectious diseases run a "mild" or "atypical" course in

certain individuals. Whether this be due to differences either in individual susceptibility or in the virulence of the invading germ, the practical outcome is the same, namely, that in every community there exist at times undiagnosed or missed cases of certain diseases against which the usual safeguards are not maintained. Such missed cases are at present an important factor in the spread of disease in schools. Their occurrence emphasizes the need of paying attention to slight and apparently trivial indispositions. Systematic medical inspection is useful not only in observing remediable defects in school children, but in detecting the presence of disease carriers, who may not themselves be seriously ill, but who may menace the health of their schoolfellows. There is no security that a pathogenic microbe which is producing an insignificant disturbance in one child will not, when transferred to another, lead to serious consequences. The detection of a mild or incipient case of infection will undoubtedly prevent some extensive school epidemics.

I am aware that some observers regard school attendance as a minor factor in the spread of scarlet fever and diphtheria. There is much expert opinion and some evidence to support this view. Since I have recently discussed this phase of the subject elsewhere,* I need not refer to the matter here further than to point out that the known facts regarding the bacteriology and modes of transmission of diphtheria favor the view that many extensive outbreaks of this disease are of school origin. The relative proportion of all diphtheria infection that can be attributed directly to school attendance needs further and more extensive investigation.

Whatever be the truth as regards diphtheria and scarlet fever there can be no doubt that measles may properly be called a school disease. Most of the investigated cases of measles among school children can be traced very directly to school infection.

In an outbreak of measles that came under my observation in March and April, 1913, among the children attending the Elementary School of the Department of Education of the University of Chicago, the influence of school attendance was clearly shown. While about one-half of the school population (281) was susceptible, 66 per cent. of the susceptibles in two grades (22 in 33) were attacked, and less than ten per cent. (10 in 107) in the rest of the school. The children in the two grades affected had been associated in the rehearsal of a play, and during this period one child in the early stages of measles was attending the sessions of her grade. All but one of the primary cases were in these two grades,

*Jordan, Jour. Amer. Med. Assn., 1913, 60, p. 409.

and 6 of the 10 secondary cases occurring in other members of the school were in families in which a primary case had occurred.

An interesting description of a measles epidemic in Richmond, Va., in 1910 has been given by Levy.* Particularly suggestive are the statements made regarding the cross-action of day schools and Sunday schools in causing a wide dissemination of the infection.

"A case would develop in a day school. Being highly contagious before the eruption appeared (with the child still going to school), other cases would develop in this room later, and these, in turn, would be highly contagious before it was recognized that they were ill. Meanwhile, tho in one room at school, these children attended a number of different Sunday schools, thus giving rise to many cases in each of these Sunday schools. As the latter children attended many different schools through the week, the disease was thus introduced to these schools, and so on."

In this carefully studied measles outbreak at Richmond it is important to note that Levy and his associates found that the disease in every case was contracted by exposure to some other case, and was not in a single instance spread by a third immune person or by articles which had been in contact with a case. Raffle,[†] Kingsford,[‡] and Woody[§] have also emphasized the importance of school attendance in spreading this disease.

No excuse need be made for dwelling on the importance of measles as a school disease. In the United States in 1910 there were about 6,600 deaths reported from this cause in the registration area. At the same ratio this means at least 11,000 deaths in the whole country, a number which would be considerably increased if the deaths reported as caused by bronchitis and broncho-pneumonia, but really due to measles, could be included. Scarlet fever, a disease popularly much more dreaded than measles, caused in 1910 fewer deaths than measles in the registration area.

A disease which is so serious as measles and so unmistakably spread by the agency of the schools should receive special attention from the school authorities.

It must be remembered that the chief danger of spreading measles infection occurs in the early stages before the eruption has appeared and when the child is apparently suffering only from a slight cold. Acting on this knowledge, English health officials report much success

*Report of Health Dept., Richmond, Va., 1910, pp. 34-39.

[†]Lancet, Feb. 3, 1912, p. 294.

[‡]Med. Officer, 1912, 7, p. 207.

[§]Proc. Path. Soc. of Phil., 1912, 14, p. 158.

in the control of measles by what is termed the "short early closure of schools." In this system, the class is dismissed for a period of five days, nine days after the sickening of the first case, the object being, of course, to secure the exclusion of the unknown children infected by the first case at the time these are most likely to infect other children. In the English borough, Stoke-on-Trent, where this method was applied in 1912, short early closure was resorted to on 13 occasions, on four a whole department was closed, on nine a single classroom. Altho several children sickened at home during the period of closure, there was not a single instance in the whole 13 occasions of the occurrence of subsequent cases in the school after the return of the children.* It may be suggested that under suitable conditions this method may be made less drastic by causing it to apply only to the susceptible children. Those children who have previously had measles, if sufficiently numerous, may proceed with their work without interruption. Second and third attacks sometimes occur, but whether these are sufficiently common to be of importance in general disease prevention seems doubtful. In view of the serious character of measles as a disease, as well as its importance in interfering with school work, it is desirable that parents generally should have knowledge of the chief mode of spread. There is reason to believe that the precise period at which children are dangerous as carriers of measles is not so widely known as it should be. Many outbreaks have been traced to infection communicated by children supposed to be suffering from more or less severe "colds," but really in the initial stages of measles.† Exposure of a susceptible child to measles should be sufficient ground for keeping that child away from other susceptible children for one week beginning 8 days after the date of known exposure. Parents should be made aware of their responsibility in this matter. Even with the widest campaign of education, however, there will probably always be enough cases in which exposure is unknown to make the English method of school closure or some such procedure well worth adoption by school authorities.

Another disease that is probably largely disseminated through school agency is whooping-cough. Like measles the seriousness of whooping-cough is commonly underestimated, and Morse‡ has lately made a strong plea for the more efficient control of this fatal disease. Whooping-cough is most serious in infants and young children and for this reason less attention is paid to the disease when it occurs in children

*Med. Officer, 1913, 9, p. 283.

†See for example, Young, A Measles Outbreak in Chicago, *Am. Jour. Public Health*, 1912, 2, p. 791.

‡*Jour. Amer. Med. Assn.*, 1912, 60, p. 1677.

of school age. In many cities and states in this country neither isolation nor notification of whooping-cough is required, and in some places even active cases of the disease are not excluded from school.

The long and tedious course of the malady and the slight constitutional disturbance usually caused in older children explain sufficiently the difficulty of enforcing any sort of restriction. At the same time it must not be forgotten that most of the cases in children of school age are contracted away from home, and that the infection is carried by them to the younger children of the same household. As in measles so in whooping-cough it is important to know the fact that a child has been exposed to the disease. Reasonable precautions may then be taken to avoid transference to children under 5 years of age, since it is among these younger children that 95 per cent. of all deaths from whooping-cough occur.

We know that in some diseases, typhoid fever and diphtheria for example, perfectly healthy persons who have no symptoms of the specific disease and so far as known never have had, are yet carriers of disease germs which, when transferred to another individual, are capable of producing typical attacks. In some instances such healthy carriers are known to have been in contact with acute cases or convalescents; in others no such association can be traced. Cerebrospinal meningitis in particular seems to be largely spread through the agency of healthy carriers. "By comparison, the influence exerted upon the spread of the disease by the actual cases of meningitis is probably quite inconsiderable."—(Ledingham.)

From the standpoint of preventive medicine it is important for schools to guard against transmission of disease by (1) children in the very early stages of some infections, notably measles; (2) children suffering from mild attacks of diseases like whooping-cough and diphtheria; (3) children who have been in contact with recognized cases of disease altho not themselves visibly affected; diphtheria and meningitis carriers seem to be especially likely to be produced in this way.

Above all, detailed, expert study of epidemics among school children would undoubtedly throw much light upon the real responsibility of schools in facilitating the diffusion of disease through the community.

INFLUENCE OF WATER-BORNE DISEASE ON THE MORTALITY OF CHILDREN

BY

A. J. McLAUGHLIN

The principal water-borne diseases are typhoid fever, Asiatic cholera, and dysentery. Certain diarrhoeas of obscure etiology which have been called "winter cholera," "ptomaine poisoning," etc., etc., are also very often water-borne. When the water supply of a city or town is polluted by sewage any and all of these diseases may be prevalent in children. The influence of these diseases upon child mortality is difficult to estimate for two reasons; first, intestinal diseases in children are very often atypical and frequently are unrecognized; second, children may present frank symptoms of cholera, typhoid, or dysentery, apparently due to contact or milk infection but which was indirectly due to water.

Atypical Cases. The frequency of atypical cases of cholera in children was demonstrated in the writer's experience in the Philippines.*

The predominant symptoms in the fatal cases investigated were not those of cholera, but cerebral manifestations were common resulting in diagnoses of meningitis and convulsions. Many of the milder cases would be unrecognized unless chance bacteriologic examination of the stools discloses the cholera vibrio.

In our own country physicians have had the same experience with typhoid fever. If we expect to make our diagnosis in children by the presence of rose spots, diarrhoea, or any of the other classical symptoms of typhoid, we may overlook many atypical cases which fail to present these symptoms. The solution lies in bacteriologic examination of the blood and excretions in all sick children with indefinite symptoms.

Cases Indirectly Due to Water. Frank cases of cholera, typhoid, or dysentery may apparently be due to contact, flies, or milk and yet indirectly, at least, be due to polluted water. Polluted water is often used to dilute milk or to wash milk cans or bottles. Water-borne typhoid establishes foci of the disease from which contact cases are derived. The incidence of water-borne typhoid fever, for example, can be estimated by the reduction in the total typhoid rate effected by substituting a pure for a polluted water supply. This reduction is not

*McLaughlin, Allan J. Some observations upon cholera in children. *Philippine Journal of Science*, Oct., 1909, page 363.

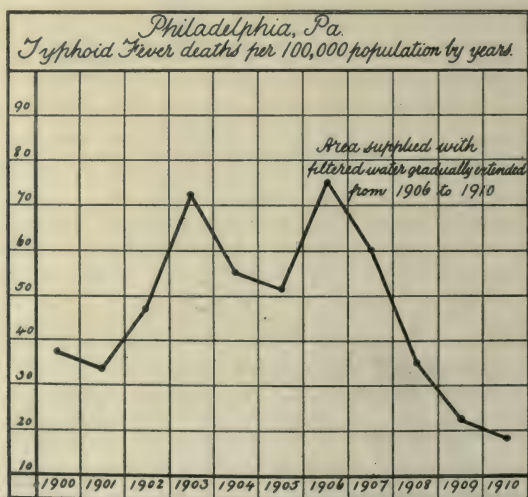
confined to the adult population but a marked reduction in the typhoid incidence in children is also effected.

The old idea that typhoid fever was not a disease of children had no basis of fact, but was strengthened by comparative rarity of typical and the frequency of atypical cases in children. The writer has made an investigation of the effect of sewage polluted water supplies on infant mortality* and his results show that a grossly polluted water supply is usually coincident with an excessive infant mortality, and that this infant mortality is especially high in the winter and spring months.

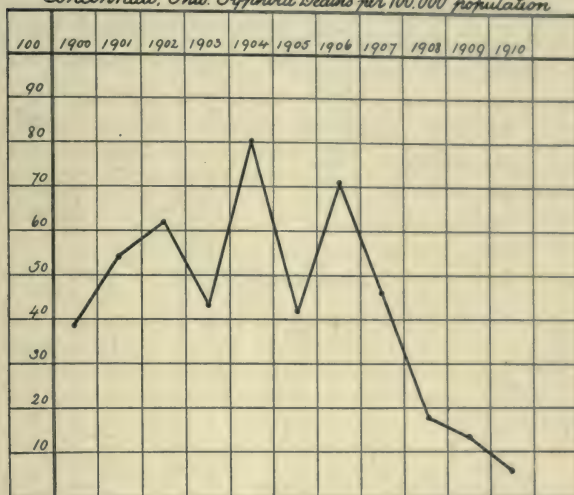
The incidence of water-borne disease in children of school age coming between the two classes, adults and infants, is probably higher than generally supposed. The following charts show the reduction in typhoid fever effected by substituting a safe for a polluted water supply.

Philadelphia gradually extended the area receiving filtered water from 1906 to 1910. Note the coincident reduction in the typhoid fever rate. Cincinnati, O., installed a filter plant in 1907. Note the reduction beginning immediately thereafter and culminating in 1910 with a rate of only 8.8. Pittsburgh, notorious for years as a typhoid center, began furnishing filtered water to a portion of the city in November, 1907. Note the enormous reduction coincident with the increase in the filtered water area. Escanaba, Mich., had probably the worst typhoid fever history among the smaller cities with the possible exception of Niagara Falls. A filter plant was installed in 1910. Note the prompt and permanent reduction effected.

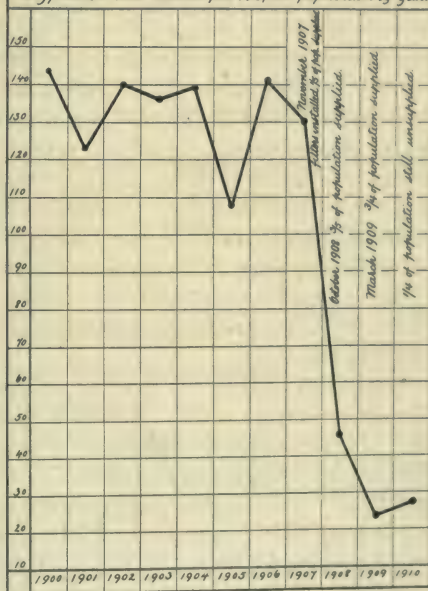
*McLaughlin, Allan J. Sewage polluted water supplies in relation to infant mortality. Reprint from Public Health Reports, No. 77.

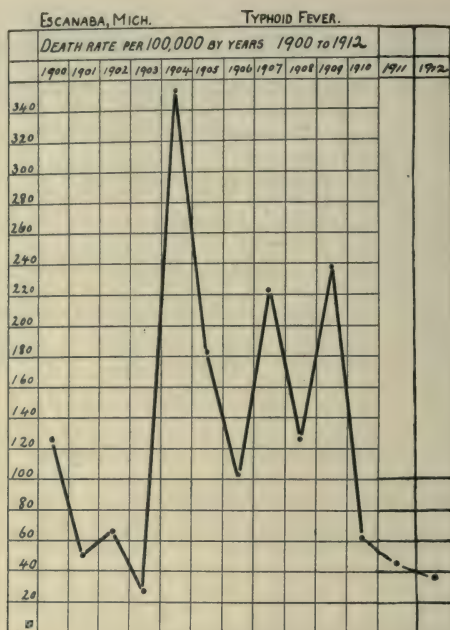


Cincinnati, Ohio. Typhoid Deaths per 100,000 population



*City of Pittsburg, Pa.
Typhoid Fever deaths per 100,000 population by years*





Niagara Falls' record for typhoid is particularly reprehensible in view of the fact that hundreds of thousands of tourists visited that city every year. The average typhoid fever rate in Niagara Falls for 12 years, 1900-1911, was 124 typhoid deaths per 100,000 population. Filtered water was supplied to the entire city in April, 1912. Typhoid deaths in May were due to infection prior to April. Reduction in typhoid deaths would be expected to be evident in June. In June there were no deaths from typhoid fever and the rate for the first year, June 1st, 1912, to July 1st, 1913, was only 30.

Hundreds of other instances might be cited, but these examples should suffice to show the enormous effect of water-borne diseases on our mortality and morbidity statistics.

These so-called water-borne diseases are transmitted by means of many other agencies than water, so that in addition to preaching the gospel of pure water in eradicating diseases such as typhoid and dysentery, we must attempt to check the spread of these diseases by milk, flies, and dirty fingers. There is no general field for the spread of hygienic education so promising as the public schools. It is often a fruitless endeavor and always a difficult task to convince adults that certain simple hygienic measures will prevent disease. On the other hand, the

receptive mind of the child quickly accepts these principles and eagerly applies them to everyday life. The influence of a good teacher in moulding the plastic mind of a child is no where more beautifully illustrated than in the teaching of simple hygiene applied to the prevention of disease. The success achieved in the Philippines in suppressing cholera epidemics in recent years was due in no small measure to the teaching in the public schools of simple rules for its prevention.

The children taught their parents simple personal and family hygiene, and with greater success than could have been achieved by any health officer.

Children should be taught the following:

1. That it is the plain duty of municipalities to furnish safe water 365 days in the year.
2. That it is their inalienable right to demand and receive such water.
3. That water cannot be assumed to be safe unless shown to be safe by a daily bacteriologic examination.
4. That the necessity for daily bacteriologic control of water supplies applies to filtered as well as unfiltered surface supplies.

In addition to teaching the necessity for safe water supplies, other measures for the prevention of the so-called water-borne diseases should be advocated to cut down the infections due to contact or dirty fingers.

The gospel preached to the children in regard to food infection should be simple and need not involve more than two primary facts:

1. Contamination of food or drink by careless fingers may be equivalent to homicide.
2. Such dire results can be avoided by careful cleansing of hands and finger nails after using the toilet and before handling food and drink.

This simple instruction should be general. More intensive and complicated instruction should be given only by professional nurses and physicians where actual cases of illness exist in the proper care and disinfection of human excreta.

Such a campaign of education would not only reduce the typhoid fever prevalence, but would be followed by a decrease in bacillary dysentery and in the group of entities commonly classified as "diarrhoea" and "enteritis of children."

THE COMMON COLD—A MENACE TO PUBLIC SCHOOLS AND PUBLIC HEALTH

BY

J. G. PARSONS

It has been pretty definitely settled that the public school presents one of the greatest means for the dissemination of communicable diseases.

Children coming from all sorts and conditions of homes, bringing with them all sorts of infections make of the public school the great distributing center of infection for the whole community.

Acting upon this knowledge, it has been the practice of health authorities to close whole schools when it has been discovered that some especially dreaded form of infection is prevalent. The amount of school time lost by closing schools in the presence of epidemics of scarlatina, diphtheria and smallpox has been and still is something enormous.

With the development of more advanced ideas of epidemiology it has come to be understood that it is both from a sanitary and an economic standpoint unwise to suspend the sessions of an entire school for the purpose of eliminating a few pupils who are the real distributors of infection.

It has been found much more rational and practical to detect the sources of infection and exclude them from contact with the others and this process of elimination by exclusion is, in the writer's opinion, the key to the efficient control of infectious diseases in any community.

It is not so long since, in the minds of most people, all disease was a mysterious dispensation of Providence, to be endured and not impiously prevented. Even to-day many intelligent people, and not a few of them members of the medical profession, regard measles as a disease to which childhood is predestined and which it were futile to attempt to prevent.

It is generally known that measles is infectious, and that it contributes quite a bit (though this is greatly underestimated) to the general mortality, and yet so little is its importance appreciated by both medical profession and laity comparatively little is done to prevent it.

If this be true in the case of a disease known to be infectious how much more difficult is the problem of preventing that group of infections, so common, and yet so misunderstood, so trifling, in the minds of the majority, and yet so dangerous: the common colds.

The popular conception of "colds" seems to be that they are in some mysterious way connected with low temperature, based upon the fact

that they are more frequently encountered during the winter months. To be consistent with the theory the prevalence of colds during warmer seasons is accounted for by "drafts" which are supposed to reduce the surface temperature of the body by rapid evaporation of the moisture of the skin.

Accordingly the popular method of preventing colds is to keep people warm and free from currents of air, especially air which is cool and fresh enough to be wholesome.

With these theories so prevalent it is small wonder that adequate ventilation, especially of public buildings, is so difficult to obtain.

In the light of our modern scientific knowledge of the nature of colds, limited though it is, we may readily understand how the very precautions commonly taken are themselves productive of the most favorable conditions for the development and spread of these infections.

While the exact pathology of this group of infections has not been worked out there is no doubt whatever that colds are of an infectious nature, and are spread through the infected secretions from the upper air passages which are driven forth from the infected individual by coughing, sneezing and the mouth spray while talking. The infectious material may also be carried through the medium of the common drinking cup, pencils and other school room material, and by the dust from dried secretions which have carelessly or accidentally found lodging on the floor.

The same principles are involved in the spread of colds as are in any other infectious disease.

The bacterial agents which are concerned in the infections are varied, but those most frequently present are pneumococcus, staphylococcus, streptococcus, influenza, Friedlaender and micrococcus catarrhalis.

Acting locally on the mucous membranes of the nose and throat these germs set up the pathologic conditions which characterize a "cold;" swelling of the mucous membranes, outpouring of mucus, and pus formation. General symptoms of fever, malaise, headache, etc., are present, due to the absorption of toxins and to the pressure upon nerve terminals caused by the swelling.

These general symptoms alone are enough to incapacitate a pupil for study, and for this reason, if for no other, all possible precautions should be taken for the prevention of colds in schools.

In the popular mind this is about all there is to a cold, but when we consider the more serious results which are liable to occur, and frequently do occur, the trouble is by no means so slight.

An infectious process of this nature may readily extend to other regions.

The accessory cavities which communicate with the nasal chambers extending above the brows as the frontal sinus, into the upper jaw as the maxillary antrum, into the body of the sphenoid bone as the sphenoid sinus and occupying the space between the nasal wall and the orbit as the ethmoid cells are quite readily infected and produce serious results.

We have to deal in such conditions with extensive suppuration which exerts a poisonous influence on the entire organism, a possibly decay of bone, the extension of the infection to the cranial cavity and the development of meningitis. Furthermore it frequently happens, especially when the ethmoid cells and the sphenoid are infected that the optic nerve, which runs in close relation to the structures, may become diseased and result in partial or complete blindness.

The infectious material passing down the throat from the back of the nose is often forced through the eustachian tube into the middle ear. This is especially liable to occur when the nose is blown.

Nearly all infections of the ear which result in deafness or even brain disease gain entrance in this manner.

Starting from a common cold infection extends up through the eustachian tube into the middle ear producing suppuration therein in the same manner as it occurs in the accessory sinuses of the nose. The suppuration may fortunately drain through the drum head and leave little impairment of hearing. In many cases, however, the small bones become affected and deafness results. It not infrequently occurs that the bony walls of the middle ear become diseased and the decaying process extends back into the mastoid cells behind the ear, and from there into the cranial cavity, setting up meningitis and brain abscess.

Infection not infrequently passes through the tonsillar structures into the lymphatics of the neck, giving rise to very serious forms of abscess which may endanger life.

Aside from the simpler forms of laryngitis and involvement of the trachea and bronchial tubes which so frequently follow in the course of a cold it is undoubtedly true that pneumococci which so often are actively responsible for suppurations of the sinuses and middle ear find the way paved for their entrance into the lungs by the preliminary action of common colds. It is a serious matter to contemplate that pneumonia, the great rival of tuberculosis as a destroyer of human life, is intimately associated with so apparently a simple disease as a cold.

It is unnecessary to elaborate upon the impairment of resistance to infection which is brought about by colds, rendering the organism especially susceptible to tuberculosis, etc.

Another danger which should not be forgotten in the consideration of this subject is the fact that not infrequently diphtheria masquerades as a common cold. Mild cases of diphtheritic infection in persons pos-

sessing a partial immunity becomes a most dangerous menace to public health, and these "carriers" are very often found to be the source of infection in schools. Numerous cases of this nature have been reported where pupils and teachers have rendered diphtheria endemic in certain localities.

In view of the facts presented, namely, that the so-called common cold may be a much more serious disease in a mild form; that the simpler forms of the malady themselves are real sources of danger in that they may produce dangerous complications of the accessory sinuses, and the ears, resulting in blindness, deafness and meningitis; that through involvement of the lymphatics abscess formation and general infection may result; that dangerous involvement of the lungs from pneumonia and tuberculosis are liable to follow; and that these so-called colds which present these sources of danger are infectious in origin and are communicable it should be definitely understood by all school authorities that children affected with colds should be excluded from contact with others to whom they might pass on their infection.

It should be understood that the public school as a central distributing point for these infections is a positive menace to the health and lives of the whole community unless rational precautions are taken to prevent the spread of infection as is done in other diseases which the public recognizes as requiring isolation.

It should be announced upon the authority of this Congress that such are the facts and that such precautions are demanded.

Within the space of time permitted by this paper it is not possible to treat in detail the methods of prevention which would be efficacious, but a few suggestions may be made.

Medical inspection of schools is essential to further progress in public health administration. By this means, and by this means alone, will it be possible to control the spread of diseases which are spread from public schools as a center.

In the aggregate the most serious group of infections, the colds, must be recognized and controlled by medical inspection as are other contagious diseases.

Exclusion of pupils having these diseases is imperative. Special instruction as to the way disease is spread, by coughing, sneezing and spitting should be given to all pupils, who should be taught how to avoid spreading their infections to others.

The common drinking cup and common towel should be abolished. Rigid insistence upon cleanliness among pupils personally, their care of books, seats and the buildings must be had. Thorough cleaning of buildings daily, using an efficient antiseptic spray in connection with sweeping and dusting are important.

Lastly, the open air school should be insisted upon as the ideal, and where this is impracticable the nearest approach to it which can be obtained by open windows and superabundance of fresh air should be required.

To secure intelligent coöperation among teachers it should be insisted upon that they be informed concerning these fundamental hygienic principles, which should be thoroughly taught in all normal schools. To secure the coöperation of parents the school system should provide public lectures on popular health topics to which parents should be urged to attend. All teachers should be required to attend these lectures and be constantly made to feel that they share in a great measure the responsibility of the medical inspectors in making the public school a healthful spot instead of a center for the dissemination of infectious disease.

SESSION TWENTY-FIVE

Room D.

Tuesday, August 26th, 9:00 A.M.

THE EXCITING AND CONTRIBUTORY CAUSES OF DISEASE AND PHYSICAL DEFECTS IN SCHOOL CHILDREN (Part Two)

CHARLES V. CHAPIN, *Chairman*

DR. EDWIN A. BOWERMAN, Buffalo, N. Y., *Vice-Chairman*

Program of Session Twenty-five

CHARLES V. CHAPIN, M.D., Superintendent of Health, Providence, R. I. "The Disinfection of School Rooms; Is It Necessary?"

WILLIAM G. BISSELL, M.D., Chief of the Bureau of Bacteriology, Buffalo, N. Y. "The Control of Diphtheria in Public Schools."

WALLACE HATCH, Rhode Island Anti-Tuberculosis Association, Providence, R. I. "A Study of Schools from the Standpoint of Health."

JAMES A. BABBITT, M.D., A.M., Professor Hygiene and Physical Education, Haverford College, Pa. "The School Boy and His Mucous Membranes."

B. ALEXANDER RANDALL, M.D., Ph.D., Professor of Otology, University of Pennsylvania; Ear Surgeon to University and Children's Hospital, Philadelphia, Pa. "A Free Nose Essential to the Prevention of Deafness, Adenoid Hypertrophy and Kindred Troubles."

E. DE WOLFE WALES, M.D., Clinical Professor of Otology, University of Indiana, Indianapolis, Ind. "Prevention of Ear Troubles Among School Children."

ROWLAND G. FREEMAN, M.D., A.B., Adjunct Professor of Pediatrics, University and Bellevue Hospital Medical School, New York City. "The Reduction of Infectious Risks in Schools."

MARCUS A. DOW, General Safety Agent for the New York Central Lines, New York. "Accident Prevention as Relating to Child Welfare."

L. WHITTINGTON GORHAM, M.D., Ass't Pathologist, Boston City Hospital, Boston, Mass. "The School Child as a Carrier of Whooping-Cough."

THE DISINFECTION OF SCHOOL ROOMS— IS IT NECESSARY

BY

CHARLES V. CHAPIN

The disinfection of school rooms, particularly as ordinarily practiced by gaseous disinfection, or fumigation, is based upon tradition, and is doubtless actively encouraged by the makers of disinfectants. This tradition of the value of disinfection dates back hundreds of years and never had any scientific foundation. It did, however, receive some apparent support in the days following the discovery of the relation of bacteria to disease, when our knowledge of micro-organisms was very much more imperfect than at present. The burden of proof of the necessity for disinfection lies upon those who urge it, yet little is forthcoming and the arguments are *a priori* arguments. It is suggestive that abundant evidence has accumulated that the routine disinfection of the rooms in dwellings as ordinarily practiced is neither necessary nor effective.

The disinfection of school rooms is for the purpose of preventing the spread of contagious diseases in schools. It is therefore perhaps proper to inquire to what extent these diseases do spread in school.

There is a general belief that contagious diseases are very frequently contracted within the walls of the school room. This belief is, to a large extent, at least in English-speaking countries, due to the great authority of Sir Shirley Murphy, who showed that some of these contagious diseases of children in England increased very decidedly after the passage of the Elementary Education Act in 1870, and whose specific studies of scarlet fever and diphtheria in London brought out the fact of their great diminution during school holidays. It is chiefly for the restriction of scarlet fever and diphtheria that the disinfection of school rooms is urged and practiced. Nevertheless many other diseases are also, it is claimed, often spread in the school room, such as tuberculosis, pneumonia, influenza, measles, whooping cough, mumps, streptococcus sore throat, as well as other minor affections. As regards scarlet fever and diphtheria, careful studies and detailed investigations have, in many places, been made, as to the relation of these diseases to school attendance, and the more intensive the study the less likely are the schools to be accused. The careful work of Kerr in London indicates that these diseases are rarely contracted in school. Kingsford in Liverpool could find no evidence against the schools as an important factor in the spread

of scarlet fever and diphtheria. Similar conclusions are reached as regard scarlet fever by Kerr in Edinburgh, D'Ewart in Manchester and Pogowski in Berlin. In Providence it has been shown that the seasonal distribution of scarlet fever and diphtheria is not dependent on school attendance, that these diseases decrease at the ages when children begin to go to school and that school outbreaks are rare. Jordan, in a recent review, considers that the case against schools as foci of scarlet fever infection has not been proved, and quotes several German writers as to the small part played by school attendance in the spread of diphtheria. It is quite otherwise with measles. The popular notion that measles are spread through the schools seems to be substantiated by the careful study of Kingsford, but as fomites infection in this disease is quite evanescent, and as disinfection of the home after measles is being abandoned in the few communities in which it has been practiced, the disease does not interest us in this connection. Disinfection after whooping cough is no more urged than it is after measles and for much the same reasons.

We must admit that scarlet fever and diphtheria are sometimes the result of school attendance and that a few small school outbreaks do occur nearly every year in our larger cities. We may admit, too, that in the country the school is a far more important means of bringing children together than it is in the city. We may admit, too, that measles and whooping cough are frequently contracted within the school room, but that the schools are a factor of importance in the general prevalence of scarlet fever and diphtheria, at least in our cities, can safely be denied.

Admitting the relation of the schools to a certain amount of infection we have to inquire how this infection occurs. It was formerly believed that the germs of disease commonly grew outside of the body, and even when they do not actually increase in numbers, that they persist for long periods of time on articles to which they become attached. It was also believed that the germs of disease easily float in the air, that the whole air of rooms is tainted by an infected person therein, and that not only do other occupants run great danger but all parts of the room itself become infected. It is now known that infection is rarely air borne. The expired breath does not carry the germs of the common contagious diseases except in coughing and sneezing and then rarely the length of one's arm. It is not on *a priori* reasoning that these modern views are based, or even on the study of the life history of disease germs, though such study lends strong support. It is by a careful study of disease itself, in the family, the dwelling, the workshop, the school and the hospital ward, that we have acquired a more definite knowledge of the modes of infection.

The common contagious diseases of our schools are spread by contact

infection. This means that the secretions of the nose and mouth are passed from child to child, directly, as by kissing, or by the contact of the faces in play, or indirectly the secretions are transmitted on drinking utensils, on towels used in common, on pencils and on anything that goes to the mouth. Children are constantly putting their fingers in the mouth and are spreading saliva upon desks, books, doors, stair rails and water closets. Other children may take up these germs on their fingers and so pass them to their own mouths. We must remember, however, that diphtheria germs, for instance, which are almost as resistant as any, live but a short time when spread out in thin patches in this way and exposed to light and air. Hundreds of swabbings taken from the immediate surroundings of careless patients rarely reveal germs and only on articles recently and grossly contaminated. Time and quantity are important factors in infection. The danger of drinking from a glass a few minutes after its use by a child infected with diphtheria is very considerable. The danger of one child picking up virulent diphtheria germs on its fingers from a stair rail or door knob, where they have been deposited the day before, is very, very, much less. If the interval is a week the danger is probably nil. The danger of infection by breathing in floating diphtheria germs derived from saliva deposited on floors and woodwork is certainly nil.

The source of school infection is usually an unrecognized source. No teacher permits a recognized case of contagious disease in school. It is the mild case, the child that is just beginning to be sick, the returning convalescent, or the carrier of disease germs, which does the harm. If such a child does harm it is quite as likely to be in the school yard while at play, or on the street while exchanging apples and lollipops, as in the school building. If infection takes place in the building the most likely channel is the common drinking cup, the next pencils used in common, then the common towel. Common modeling clay and sand and kindergarten material come next and common text books and other implements of instruction. Of perhaps slightly less importance are door knobs and stair rails. The desks are probably the least likely vehicles of infection as they are less frequently handled by different children.

It is quite direct contact with human beings who are growing the germs of disease that is dangerous. After this living cause is removed the dying germs on things are of little moment. The chief problem is how to keep infected persons out of school. This is much easier in some diseases than in others. The delayed and uncertain diagnosis of measles and whooping cough renders it certain that many infectious cases of these diseases will continue in school for several days. The conditions are more favorable in scarlet fever and diphtheria, particularly in the latter disease. Proper notification and school supervision has so successfully

removed the sources of these infections from our schools that, in cities at least, school outbreaks are quite uncommon. School closure and disinfection are the popular preventive measures, but school closure is now rarely resorted to. The proper inspection of the children will, usually, disclose the infected child who is then excluded. But commonly, in measles and whooping cough and some other diseases, and more rarely in scarlet fever and diphtheria, the living source of infection still remains undetected in school.

If it is desired to reduce to a minimum the part played by the school in the spread of infection, the mechanism of infection must be controlled or destroyed. The common drinking cup must be abolished. Wherever possible the bubbling fountain must be installed. The common towel must go. Common modeling clay and sand, and common kindergarten material should be abandoned, or, as is probably possible, may be used with such attention to personal cleanliness that the danger is minimized and the child is given an important lesson in hygiene. So far as is possible, everything that the child uses should be his own personal property, at least for the term. There should be no daily redistribution. The child should be taught to keep the fingers out of the mouth and to keep the hands clean. It is little use to preach clean hands and not provide plenty of water and clean basins and clean toweling. If the school does not provide means for washing, the child will not believe that the teacher really means what she says about the need of washing.

It will be said that all this costs money and causes trouble for the teacher. So it does. The path of sanitary righteousness is a straight and narrow one. It is difficult to walk therein. So the attempt is made by fetish worship to counteract the effects of sanitary misbehavior. Fumigation is expected to atone for every sanitary sin.

The popular methods of employing school disinfection are various. There are some who advocate a routine disinfection, monthly, weekly, or it may be daily. Admitting that such disinfection is efficient, though it usually is not, of what use can it be? As has been stated, it is the fresh secretions from the mouth and nose which do the harm. Infection on books and furniture is not cumulative. The germs tend to die off, and do die off somewhat as water dries from similar surfaces. In fact some kinds of germs die almost as fast as water evaporates, though others are much more hardy. Germs of disease do not accumulate as do dust and soot but they disappear as does moisture, though not so fast. Suppose that after school hours a room is made absolutely sterile by disinfection. The session opens the next morning. A child comes with incipient measles and sneezes over books and desk. Another child convalescent from scarlet fever wipes its nose on its hands and smears the door knob on entering. Later a diphtheria carrier drinks from the

common glass or distributes text books or other articles used in common. How under such circumstances can disinfection, practiced the night before, save the children the next day? If there happen to be no infected children there will be no need of routine disinfection. If there are infected children, and if, as is the case with most children, they do the things referred to, it will require an active imagination to detect the value of disinfection practiced at the close of each day. If routine disinfection is practiced only weekly or monthly it will be less effective in proportion to the interval. In other words *disinfection* of a school room without removal of the *infection* is a farce.

A favorite popular remedy for alleged school infection is closure followed by disinfection. To do this without searching for the infecting children is illogical, and ineffective, unless the closure is maintained for some time.

A more logical procedure is to search for the infecting children to exclude them and then to disinfect the room. This is the method usually adopted by efficient health officers at the present time whenever it appears that a disease such as scarlet fever and diphtheria is spreading in the school room. It is perhaps wise to disinfect under such circumstances provided that it be done efficiently, but the danger from its omission is certainly generally very much overestimated. To illustrate by an example: suppose a school inspector finds a boy with a sore throat, takes a culture and sends him home. The next morning the report comes from the laboratory that it was diphtheria, the school is closed and preparation made for disinfection. Meanwhile, if the boy left any saliva on the drinking-glass, the towel, the door knob, or the stair-rail, it has probably been completely removed by the lips and fingers of his schoolmates. If it happens that a few bacilli remain they are quite likely to have lost their virulence. For nearly ten years I have omitted terminal disinfection in houses after diphtheria, and for a lesser time after scarlet fever, and a careful study of results has shown that the infection of things is of short duration. I believe that after the living source of infection, the child, has been removed from the school room it is an event of the utmost rarity, under ordinary conditions, for any one to contract disease from infected things in the room. Still, as was before remarked, disinfection is perhaps not undesirable under the circumstances mentioned.

If disinfection is to be practiced it should be rational and effective. Gaseous disinfection has been shown to be ineffective except for lightly infected surfaces, and it is not to be recommended for school houses. If drinking glasses, or towels, have been used, they must be boiled, or destroyed. Clay, sand, pencils, kindergarten material, books, etc., used in common, as also blackboard erasers and chalk, had better be

destroyed, as it is difficult and expensive to disinfect them, and their destruction may cause the school authorities to abandon the dangerous and uncleanly use in common of these things. The doors, stair-rails, window sills, woodwork and walls, wherever they are likely to be touched by the children, should be thoroughly washed with hot water and soap or soda. The use of a disinfectant is probably entirely unnecessary. The desks occupied by infected children should be well washed, and the surfaces also of other desks which they are likely to handle in passing. It is also a good time to wash the floors though probably there will be no infection on them. In other words whatever the children touch should be cleansed or destroyed. Unless this is thoroughly done there is no use in doing it at all. From the rest of the room there is no danger.

Conclusions

1. In cities, at least, the part played by schools in the spread of contagious diseases, particularly scarlet fever and diphtheria, has been greatly overestimated.
2. It is the unrecognized case in school which does the harm.
3. Disease spreads by means of a quite direct transfer of fresh secretions.
4. Disinfection is useless unless the living focus of infection is found and removed.
5. Unless disinfection is practiced immediately after the removal of the infected child it is futile.
6. Rational disinfection consists in the cleansing or destruction of things handled. Things not handled are not infectious.
7. It is probably very rare indeed that the omission of school disinfection results in the spread of disease.

THE CONTROL OF DIPHTHERIA IN PUBLIC SCHOOLS

BY

WILLIAM GROSVENOR BISSELL

It is a noticeable feature that with the beginning of school sessions after the usual period devoted to vacations, the amount of contagious disease materially increases. This feature is not confined to any one municipality but has been a matter of general observation and is due to the fact that a closer association of individuals increases the opportunities for closer contact with infection.

Concerning the control of diphtheria in public schools, the principles involved are not unlike those governing the control of diphtheria in any institution where a dormitory feature is not considered. In addition to rigid medical school inspection, which is always necessary, control must be established along the following general lines:

First. The immunization of all persons infected with little attention to taking cultures.

Second. The taking of routine cultures from all persons exposed or thought to be infected.

Third. The combination of the first and second.

In considering the subject it would not seem proper to neglect a discussion of a feature in the bacteriology of diphtheria which has been of no small importance to the sanitarian, producing great difficulty in segregating the infected. I refer to the group of so-called "pseudo-diphtheria bacilli" and their relation to the true diphtheria bacillus. Ever since the announcement by Hoffman of the organism bearing his name and the finding of bacteria of slight differences in morphology, perhaps not capable of infecting animals known to be susceptible, sanitarians have often experienced difficulty in convincing general practitioners and laymen that a person need not be ill and yet be of great danger to the community.

This question of bacillus carriers has been especially troublesome, and even to this day the greater number of practitioners do not understand why a patient who has apparently fully recovered or was never ill of the disease, could still be dangerous to others.

The very able work of Mary Elizabeth Morse in 1912 which has since been substantiated by Kolmer and other experienced workers confirms the view held by the writer and many times expressed, that the diph-

theria bacillus, Hoffman bacillus and all the other "pseudo-diphtheria like bacilli" which did not possess biological characteristics of themselves distinct, were none other than diphtheria bacilli changed through some measure of mutation, and in reality members of one family. This feature is not alone confined to the diphtheria bacillus but is common to a majority of pathogenic micro-organisms. The classification as arranged by Westbrook, Wilson and McDaniel is not, in the opinion of the writer, reliable, for solid types of bacilli are frequently found and even different types in the same case during different periods of the disease. For these reasons the term "pseudo-diphtheria," which in itself is unfortunate, should only be applied to an organism having decided biologic differences from the Klebs-Loeffler bacillus.

If there chance to be an increase in the amount of diphtheria in a public school and notice given that the school is closed, it is evidence to the writer that the authorities are incapable of coping with the situation, due either to ignorance of methods or lack of facilities. The control of the disease can be much better accomplished by a continuance of the session, rigid inspection by medical men making cultures both from the nose and throat of the inmates, and, where such cultures present diphtheria bacilli no matter whether or not they be virulent, the segregation of those infected. With the maintenance of a school session under these conditions the opportunity for investigation is materially increased and the possibilities for determining the infected proportionately greater.

Experience has taught that diphtheria bacilli are seldom found in the throats of those who have not been exposed to diphtheria, and that healthy individuals with diphtheria bacilli in the throat or nose can transmit the disease. They are in fact of greater danger than persons actually ill.

The matter of virulence is purely a relative condition and an organism may be virulent for one individual or animal, and it be non-virulent for another of the same species. So the dependence of animal inoculation in controlling the presence of diphtheria in schools is not to be commended. It has been stated that about 1% of healthy persons are carriers of virulent diphtheria bacilli, but in the experience of the writer, this estimate especially in school children is far too low. In an experience covering the use of over 20,000 cultures the percentage of infected as shown by cultures made from children physically well though perhaps having an excess of throat or nose secretion, the presence of undoubted diphtheria bacilli was shown in 10% of cultures from the throat, and 13% where made from the nose. The virulence of the bacilli in these instances has often been tested with about 20% revealing an organism capable of killing a guinea pig of medium size. As regards the practical adaptability of the virulence testing method, the rehearsal

of an instance in the experience of the writer seems of interest. A school teacher who was cultured during the routine investigation was found to have both her nose and throat secretions infected with diphtheria bacilli. On account of the prominence of her position the testing of the virulence of the organisms was undertaken, and the cultures not containing organisms capable of killing guinea pigs of three hundred grams, the woman was allowed to resume her occupation. The time necessary for conducting the investigation consumed a period of nearly two weeks during which period diphtheritic infection in the school under investigation had disappeared. Within a week after the teacher resumed her occupation, virulent diphtheritic infection with cases of the disease reappeared in the school. This instance with others but of a less pronounced type seems, in the opinion of the writer, to warrant advising against depending upon the virulence testing method.

Not infrequently diphtheria bacilli carriers harbor the organism for an indefinite time. In 1910 Schiotz, a Danish bacteriologist, and in 1911 Page of Manila, advocated in such cases the use of fluid cultures of staphylococcus aureus as a spray applied to the nose and throat. This method has also been advocated by others and it has been found that cultures made after a few applications would not show the presence of diphtheria bacilli. The principle involved did not seem rational to the writer because the ordinary throat organisms oftentimes outgrow diphtheria bacilli when cultures are made for diagnosis, and even when the disease exists, negative cultural results may be obtained. It would seem that the use of a spray of any organism would increase this liability to cultural peculiarity. After a most thorough test of the method it has been demonstrated that the same cultural result can be obtained by a number of organisms other than staphylococci. The writer has been able to produce it with the colon bacillus, and in fact any organism that will not produce the liquefaction of blood serum. The introduction of any culture by sprays for obtaining culture free results in diphtheria, defeats the entire object of the culture method in controlling the disease.

There are methods even simpler than this that will accomplish the same result and sprays of cultures including the staphylococcus aureus should never be used if practical results are to be obtained in the release from quarantine of those infected.

In conclusion the writer would suggest the following methods for control of diphtheria in public schools:

First. A thorough system of medical school inspection. This portion is absolutely indispensable.

Second. That where diphtheria is prevalent, there be a continuance

of the school session with the taking of cultures from both the nose and the throat of all persons present.

Third. That where the infection is found a system of segregating be inaugurated. The more closely those persons infected can be confined, the more readily will the epidemic disappear. The amount of quarantine possible under these conditions is a matter depending largely on the degree of education on the subject to which the community has been elevated.

Fourth. In the endeavor to obtain culture free results the use of staphylococcus aureus or any other bacterial spray is inadvisable for the reason that with the introduction of the large quantities of organisms they may in the culture outgrow and prevent a detection of the diphtheria bacillus, the latter still remaining in the source from which the culture was taken. This procedure in itself defeats the entire object of culture methods for determining the continuance of infection.

Fifth. In the experience of the writer the release from quarantine by the testing of virulence is unreliable and will not control the infection. Persons that have been found infected should be segregated and quarantined to the fullest extent possible and under no circumstances permitted to attend school while the infection remains as shown by cultures in either their nose or throat secretions.

It will be noted that suggestions pertaining to methods of terminal disinfection have been omitted and in the writer's experience equally good results have been obtained without disinfection as where efforts at fumigation have been made.

The ordinary system of routine cleanliness in schools, using soap powders and water, seem to give equally as good results as when formaldehyde or any other fumigation is added. For this reason the writer believes it makes little difference whether fumigation or ordinary cleansing methods are employed. Cleanliness is absolutely essential in the control of diphtheria. Fumigation oftentimes gives a feeling of false security causing a laxity in the methods that are of paramount value.

A STUDY OF SCHOOLS FROM THE STANDPOINT OF HEALTH

BY

WALLACE HATCH

The temperature of the room was 83 degrees. Every window was closed and the shades drawn from the top to the center of the window. The painted walls festooned with ancient magazine art resembled a faded green carpet. Desks and seats, some too large and some too small for their occupants, carried unmistakable marks of long service and rare washing. Floors were splintered, grimy and the seams filled with dust, pencil sharpenings and chalk of previous seasons. Windows were narrow and their light obscured by a near-by tree on one side and an improvised stairway to the upper floor on the other. Blackboards of usual height covered every available inch on the four sides of the room. In the cloak room, which was also the storage place for brooms, dusters, cordwood and everything else not readily stored in the main room, was a black iron sink, pail of water, dipper, glass, tin basin and common towel. The box toilets in the yard, cleaned regularly each spring, made known their presence fifty feet away. The playground was rough, uneven, bestrewn with ashes and down the center trickled the overflow from the toilets. In the corner of the room sat a girl of fifteen, deformed and mentally deficient—a constant annoyance to teacher and pupils. Twenty-five children, some clean, some dirty and unkempt, some robust, but nearly all suffering from some form of untreated physical defect, were registered in this room. As there were three grades in the room, the teacher gave but spasmodic attention to each grade, depending on the children to occupy the balance of their time with the much soiled and battered letters, numbers, pegs, half-chewed pencils and books.

The above picture which might be called by a person unacquainted with schools extreme, illustrates with fair accuracy, conditions which can be found probably in any State in the Union, especially in rural districts. It is presented for the purpose of convincing those interested in public health that the public school system frequently affords excellent opportunities for effective health work and to show to school officials that greater attention should be given to the comfort and health of teachers and pupils and that such increased attention may mean ultimately greater school efficiency.

In all parts of the country to-day anti-tuberculosis or public health associations are seeking to combat tuberculosis. These associations

must go through evolutions seeing first only sick patients and their need for immediate relief, but realizing gradually that effective work against tuberculosis requires better homes and working facilities, better schools and more efficient public service. Many associations have passed from the exclusive attention to sick patients to the improvement of homes, mills and schools. They have realized that while there is not the same sentimental appeal in a report on school ventilation or cleaning for example that there is in a report of patients treated at the bedside or removed from unwholesome surroundings, work for better schools, which means the better care of the child from the beginning to the end of his connection with the schools, is bound to have no small place in successful community health movements. Nine years connection with associations dealing with public health questions have convinced the writer that many of the most pressing community health problems receive scant attention, because it is believed that certain public agencies are established and equipped for this purpose. The School Board, for example, is usually considered the only agency which should deal with school affairs, including even the health of the children. This view, excellent in theory, does not work in practice. Our State Boards of Education are inadequately supplied with officers, equipment and official power. Our local school committees are as efficient or inefficient, intelligent or unintelligent as the people who create them.

Consequently it behooves us, as representatives of health agencies in our respective states, cities and towns, to interest ourselves in our schools and in the health of our school children or to make clear to our communities that we assume no responsibility in this direction.

The facts recorded below summarize in a very general way the essential results of a study dealing with school sanitation and hygiene. This study was not intended to be comprehensive and consequently does not cover many subjects which specialists in school work would have included. It is not limited to any town, city or even state, although most of the material comes from Rhode Island schools. It represents merely a number of reports filled out mostly by teachers on blanks especially prepared for this purpose. Most of the schools covered by the report were located in rural or semi-rural districts, consequently the pupils could not enjoy all of the advantages so common to city schools. There is no reason, however, why the country boy or girl should receive less protection from dirt, disease, bad air or improper lighting or seating than the city child.

The following general topics were covered in the inquiry: school cleaning, ventilation, attendance, lighting, seating, utensils, physical examination, exercise, play and special school activities. The inability of many of the teachers to appreciate a study of this kind led to many

striking and, in some cases, amusing replies. For example: Many teachers could not tell when rooms had been cleaned, especially when they had been washed; when a seat or desk was adjusted to a pupil; how to determine the relation of floor to window space; how physical examination of eyes, ears, throats, teeth, etc., could be followed up; what constituted practical hygiene; what was meant by directed play and home economics; how to determine the cubic feet of air space per pupil; what was meant by appropriate playground apparatus, etc., and consequently many of the answers failed to convey any intelligent meaning. The question, "School room swept when?" was answered: "Sept. 27th." "Floors washed or scrubbed when?" Ans. "Not this fall"—"occasionally"—"as needed"—"last week"—"when water is in well"—"once"—"oiled." "Seats and desks washed when?" Ans. "Often"—"not this fall"—"last week." "Square feet playground space per pupil?" Ans. "10,780"—"large"—"ample." "Appropriate apparatus for playground?" Ans. "Excellent trees"—"croquet set." "Kind of toilets?" Ans. "Common." "Shades hung from" (indicating top or center)? Ans. "Roller." "Practical hygiene taught when?" Ans. "Occasionally"—"as needed."

This paper attempts merely to interpret in a general way information more or less complete received from 208 school teachers. The fact that much of this information is unfavorable reflects on the rest and perhaps better part of Rhode Island where a large part of the information was gathered only in two particulars: First, information from better schools which was sought but not obtained would have improved the general showing. Second, schools with better ideals and standards should have extended their influence to less developed parts of the State years ago.

We all recognize it as a fact that the cleanliness of the school room and its equipment bears a vital relation to the health of pupils. In one room where the children seemed unusually pale and sickly, the teacher explained that she was unable to open windows or give exercises in the room because the dust stirred up irritated the children's throats. Investigation showed that the school yard and the path from the sidewalk to the school were topped with clay which was always moist and sticky in wet weather. Quantities of this clay were tracked into the school each day to await removal in the weekly sweeping. There would be reason for the belief that this might be an isolated case and that generally speaking school floors and desks were clean, were it not for the facts contained in the reports by the teachers. These reports showed conclusively that school floors are not uniformly clean, that washing is unusual and that brushing is frequently more perfunctory than real. Sixty-two teachers out of seventy-three reporting stated that desks and seats were clean, but in only three rooms were the seats washed

weekly while in forty out of fifty-four rooms they were washed not oftener than once a year and in 154 rooms the teachers failed to report on this item. We may safely conclude from these facts either that children's hands are uniformly clean or that cleanliness of desks and seats is considered unimportant.

The method and hour of school cleaning deserve more attention than they usually receive. At visiting one school at three o'clock in the afternoon, the writer saw the janitor sweeping hallways and clothes-closets with a coarse broom, while windows were shut and doors opening upon class rooms were open. No dust layer or moistening were used in this sweeping and in consequence the cloud of dust which filled the hall penetrated the classrooms where the pupils were at work. Some school janitors not only sweep but dust their school rooms. Generally, however, dusting is done by teachers or pupils just previous to the opening of school.

The herding of twenty-five or more children in a small room can be safe only where there is an abundance of fresh air and sunlight. When on the contrary, there is an inefficient ventilating system, or as is often the case, no system at all and no windows open throughout the hours that the school is in session, it is not surprising that colds are of frequent occurrence and the absence roll very high. A certain definite cubic air space per pupil is sometimes required for the supposed purpose of ventilation, but the Massachusetts method of requiring that each school room shall be given thirty cubic feet of fresh air per pupil per minute furnishes the safest standard for the ventilation of school rooms.

The amount of air which actually flows to and from the school room, except where efficient ventilation systems are in successful operation, is surprisingly small. Anemometer tests of twenty-three class rooms, some equipped and some not equipped with ventilating systems, showed that few of the rooms were receiving the required minimum of thirty cubic feet of new air per minute per pupil. Numerous amusing incidents were brought to light in measuring the air flow. In one almost new school equipped with a gravity system, the teachers complained that the air was poor and not sufficiently warmed. Investigation showed that the janitor "didn't intend to heat all outdoors," so he had closed and nailed the intake of fresh air. In another school where the teachers relied in part upon a ventilation system, it was found that the intakes had been covered with tin some years before and that chimney swallows had built permanent nests in the outlets. In another school the fresh air inlet was a dilapidated wooden box which passed along the floor of an uncemented and filthy cellar. Frequently when teachers and janitors were shown how little air was actually flowing to class rooms, they found obstructions which could be removed and changes made which

greatly improved the efficiency of the device. In schools without artificial systems, the ventilation or non-ventilation of class rooms depended entirely upon teachers. Window boards were often pressed into service to meet the growing demand for fresh air, but demonstrations with the anemometer proved that artificial systems or makeshifts could not be relied upon and that the only certain method for ventilating class rooms was to be found in an inflexible rule requiring complete flushing by opening windows top and bottom at least twice every hour.

School attendance is one index of school efficiency. The year's work of the school is planned on the basis of the total number of pupils enrolled. There can be no reduction of equipment, teaching force or cost of heating to meet a varying attendance, and any reduction by absence means loss upon the invested capital and running expenses and the further loss occasioned by the necessity of bringing absent pupils to the standing of the rest of the class. Reports showed that 15% of the pupils were constantly absent from school, indicating that the schools were conducted at not over 85% of their possible efficiency. There was also a further reduction in efficiency and likewise a cause of absence in the untreated physical and mental defects of pupils and the lack of sympathy between home and school. Physical defects, combined as is often the case with antagonism or indifference in the home, render pupils unfit for regular class room work and tend to demoralize entire classes. The tremendous loss, then, to pupils, school system and eventually to taxpayers, traceable to unnecessary absences, sickness, defectiveness or lack of contact between home and school, represents an economic loss to the community which underlies much of the criticism of the public school about which we hear and read so much to-day.

The repeating of a grade by a pupil ordinarily seems of slight consequence, but when 173 repeaters are found in twenty-two school rooms, or eight in a room, when eight repeaters mean one-quarter of a total class, when each of these eight pupils at the close of the second year in the same room will be a year older (and age, rather than grade, generally determines the all important question of school or work) and when repeating of a grade amounts to an acknowledgment by the school system that the year of work, which costs from \$20.00 to \$30.00 for each pupil, is a failure, we realize that from the standpoint of the school, the pupil and the community the problem of the repeater is a serious one.

The lighting of the school room deserves more consideration than it usually receives. Opinions differ whether the best light comes from the left or from the left and back of the room. All authorities agree, however, that lighting from three sides, from the left and right and from the front is undesirable. The connection between eye trouble, fatigue, inefficient work and disease are well known. In view of the accepted

theories on lighting, it seems scarcely believable that we should tolerate to-day twenty-nine school rooms out of eighty-nine reporting with light from the front. It should be equally impossible for us to tolerate cross lights; unnecessarily wide piers which give a combination of glare and shade on many of the desks; blackboards placed so as to reflect the light or make it necessary for pupils to look into the glare whenever they are engaged in board work; or shades hung from the top of windows and generally drawn to the center, thus shutting off light on the far side of the room and permitting glare upon desks near windows.

The relative amount of window and floor space determines the available light. Generally speaking, window space should equal 20% of the floor space. More than one-third of the rooms studied were found to have ample light, but another third had far too little light for proper class room work. In some of the rooms containing the smallest proportion of window space, the available light was obscured by trees and other obstructions.

Wide school rooms often render efficient lighting impossible, but improvements can often be made by extending windows to ceilings. Many of the widest rooms studied were found to be fitted with old-fashioned windows, dropped in some cases six or seven feet from ceilings. Pupils sitting near windows in these rooms received ample light, but those sitting farthest away doubtless strained their eyes, especially during short winter afternoons.

The relation of school desks and seats to the comfort and health of pupils has seldom received serious attention. An active child rebels even at the restraint which the class room places upon him. When, in addition to this, he is imprisoned behind a stationary desk, in some cases many sizes too large or too small, his endurance is taxed beyond the limit, and unconscious of the cause, he ceases to think and spends his time annoying his neighbors. Add to the discomfort of back and muscles, the eye strain which poorly adjusted seats and desks inevitably produce, multiply these discomforts and the unconscious rebellion they cause by the number of pupils similarly affected and the chaos noticeable in many schools is easily understood.

One hundred and forty-six rooms with seats adjusted or partially adjusted to pupils out of 208 rooms reporting, would seem to prove that many teachers had learned to appreciate the value of comfort. Unfortunately, however, later investigation proved that in many rooms seats were considered to have been adjusted where they had been fitted to pupils at the opening of the school year regardless of later changes.

Common books, pencils and rulers are largely relics of the past. Common counting pegs, letters and blocks are used in only a few schools. Common drinking cups have disappeared from some States and from

some towns in Rhode Island, but common pails, basins, soap and towels have not so well impressed their dangers upon school committees, superintendents and teachers. Numerous changes from common to individual utensils made after one explanation of the dangers from these sources, however, encourage the belief that education will overcome these and many other similar dangers. The facts that thirty-three school rooms reported bubbling drinking fountains, while 131 rooms reported the use of individual cups, is significant of a growing change.

Reports on toilets, baths, basins and clothes closets indicated a general absence of attention to this very important part of the school equipment. Baths were unknown. A few teachers reported basins, but many of these were found to be very dirty. Toilets located outside school buildings appeared to receive little care. Nearly one-half of the toilets were reported dirty, seven were described as filthy and thirty as throwing off a decided odor.

Thirty-three clothes closets were found to be ventilated and thirty-five were well lighted, but in nearly all hooks were placed so close to one another as to allow the clothes of one pupil to hang against those of others. Contact with outer garments does not, it is believed to-day, spread disease, but the bodies and clothes of many school children suggest the importance of well-ventilated and lighted clothes closets with hooks sufficiently separated to keep garments of one pupil away from those of others.

Medical inspection of school children is now a matter of every-day discussion. The marvelous improvements which have been wrought in numerous places where medical inspection has been given a fair trial, offer ample arguments in favor of reasonably large expenditures for this purpose. The law of Rhode Island now requires annual examinations of sight and hearing in all schools in the State. Some school systems in advance of the law, have provided for the inspection of throats, skin, heads, lungs and teeth; some have organized school nursing and home visitation systems; and one city has established a free dental dispensary.

The need for efficient medical inspection was forcibly emphasized in one town where a boy had been sent from school on account of sores on his arms. The teacher realized that if the sores were infectious, the boy should not be in school, but she failed to realize that without medical or nursing attention the boy might be a greater source of danger out of school than in it. In visiting the home of this boy some weeks after he had left school, the writer found the pupil to be in serious need of medical and nursing attention, but engaged in stacking bread in his father's bake shop.

Regular instruction in the fundamental principles of hygiene is so closely allied to medical inspection that the two should really be con-

sidered together. Unfortunately, however, many schools which face serious health problems make no provision whatever for even the most elementary instruction in hygiene. Parents frequently rely upon the school to teach these lessons, while the school apparently takes it for granted that such lessons have been learned at home. The result is that the children are educated in school routine but left unprepared mentally and physically to resist disease. The influence of the teacher in the matter of personal cleanliness can hardly be overestimated. Investigation showed repeatedly that it was largely within the power of the teacher to determine the standard of cleanliness not only in the school but often in the home as well. One of the surprises of the study was to find children from the poorest homes showing evidences of neatness and knowledge of hygiene far in advance of pupils coming from many so-called best sections.

The close connection between instruction in hygiene and daily or periodic exercise led to the grouping of these subjects on the report blanks. It was found both in the reports and by personal visits that teachers who realized the value of frequent exercises soon discovered the value of instruction in hygiene. Teachers who instructed pupils in practical hygiene, on the other hand, were very likely to appreciate the value of frequent relaxation.

Psychological studies have shown varying lengths of time during which the attention of individuals of different ages can be centered upon different kinds of work. Such studies prove nothing more conclusively than the absurdity of attempting to fix the attention of children upon purely mental work in uncomfortable seats for two or three hours, with perhaps one break of about fifteen minutes. If the mental work of the school carried with it the stimulus incident to directed play, it might better succeed in its purpose, but for five hours a day for five days a week and for forty weeks a year the growing child in most of the schools studied is expected to give his attention, with scarcely a break of stimulus, to oral instruction and book work. Further than this, he is expected to take to his home, lessons and examples, sufficiently difficult to test his endurance in the earlier hours of the day, but which become doubly difficult when evening concentration is required.

Few teachers in the rooms studied appreciated the advantages which school exercise and outdoor playgrounds could offer. They were much interested, however, in hearing and reading about Gary, Indiana's successful experiment in rotating exercise, play, school study and hand work.

The playground connected with the out-of-town school is usually of little practical value. In size only is it suitable for use. Generally, its poor surface, uneven grade and lack of equipment render it even less

attractive than the pile of ashes which is allowed to accumulate for months in one corner.

The wider use of the school plant represents an important lesson little understood. Only four schools reported neighborhood gatherings. Branch libraries were found in twenty-seven schools, clubs in two schools and night work in two others. With the wider use of the school plant will come increased efficiency and higher standards.

The greatest encouragement to be found in a study of this kind lies not so much in recording ideal conditions which may be found as in noting improvements following investigations. Two years ago the writer conducted a school study in one Rhode Island town. The information obtained so thoroughly shocked officials and citizens that specific recommendations for improvements were requested. The following is a brief summary of the recommendations with the action taken:

That the School Committee, Nursing Association, teachers and investigators meet to discuss the school problems and consider suggested improvements. Done.

That every part of every school building be cleaned daily by a dustless method.

Action: Schools are now cleaned three times weekly, a dust layer being used.

That toilets be adequate in number, clean and odorless. Action: Toilets were rebuilt or otherwise improved and now receive systematic attention.

That school rooms be adequately and properly lighted. Action: Slight improvements were made.

That schools be ventilated as required by the State of Massachusetts. No definite action taken.

That exercise and relaxation be included in daily programs and made sufficiently frequent to maintain vigor throughout the school day. Action: Two exercise periods in each day required.

That school seats and desks be adjusted to pupils. Action: Adjustments ordered.

That a medical inspector be appointed. Done.

That school yards be graded, equipped, officered and used as playgrounds. Action: Yards regraded and fenced.

That schools be used for neighborhood gatherings. No action.

That a Fresh Air School be established in an unused church belonging to the School Committee. No action.

That health rules be placed on the inside covers of school books. Done.

That the use of common utensils in the schools be prohibited. Done.

That school books be properly disinfected at least once each year. Action: Books disinfected in rooms where epidemics occur.

That the Tuberculosis Exhibit of the State Board of Health be shown in each of the schools. Done.

That children suffering from contagious diseases be excluded from school. Done.

Many conclusions might be drawn from the above study. It is evident, for example, that increased attention not only by our school committees but by the public as well must be given to the health of school children and the efficiency of schools. No State or municipality should have a right to compel children to attend dirty schools. The fact that floors or desks are dirty is an evidence of slovenly housekeeping. When only fourteen teachers in thirteen towns report the washing of desks and seats oftener than once a year, it is evident that the public needs to take a hand, if the health of the children is to be protected.

The cubic air space in school rooms is important if little attention is to be given to the air flow. If, however, school authorities will compel the ventilation of schools perhaps by the Massachusetts standard or the flushing of rooms perhaps semi-hourly, we shall hear less about impure air, the weariness and petulency of teachers and pupils and the necessity of fresh air schools.

The attendance record is the pulse of the school room. High attendance combined with good health and contact between home and school indicate that conditions are right for efficient work. Objection will be made that the school cannot be responsible for health, that there is no known method for making school children alert and that home visits by teachers are impossible. It is a fact, nevertheless, with ample experience to prove it, that successful teaching and efficiency in school management require healthy bodies, knowledge that the lessons are to serve practical ends and close understanding between home and school.

Better lighting of school rooms suggests difficult problems in some places, but very simple problems in others. Often good lighting may be secured by changing shades from the top to the center of the window, by covering a front window, by rearranging seats or blackboards, by cutting down a shade tree which has been the pride of past generations or by extending windows to the ceilings. Occasionally other and more difficult problems are encountered. In the schools studied nearly all necessary changes to improve the lighting could have been effected in a few minutes or hours by the village carpenter.

Good flush toilets are far superior to the various forms of earth closets and privies. Sanitary earth closets of approved type, however, combined with proper supervision can be made unobjectionable where flush toilets are impossible.

Dirty tin basins in schools should be condemned. It should be remembered, however, that it is the dirt rather than the basin which is

objectionable. Dirty fingers touching the mouth spread disease—hence efforts to secure individual towels and soap and clean wash basins are intended to safeguard health quite as much as to encourage neatness.

The law of Rhode Island which requires yearly examinations of sight and hearing is most useful so far as it goes. School authorities, however, should observe the spirit as well as the letter of this law by providing facilities for continued attention to those found to be physically below par. The fact that 77% of the pupils in the State are under the supervision of paid medical inspectors is a most excellent start. Follow-up work with parents is now the urgent need.

Medical inspection may lead eventually to the teaching of practical hygiene, but the alert teacher, as well as the physician or nurse, should be able to teach children the essential principles of bodily care. Time spent in such instruction will pay high dividends in health and efficiency.

The playground may be made the most useful center of school instruction. Properly equipped and directed (and this means about 10% equipment 90% direction) it offers a big opportunity for usefulness. There are comparatively few subjects which cannot be taught with greater success on the playground than in the school room.

The law of Rhode Island, enacted a year ago, permitting State aid for manual training courses, offers excellent opportunities for cities and towns to develop this important part of their educational work. General acceptance of this aid will tend to raise the standard of education in Rhode Island.

Closer contact between the schools and the thought and work of the outside world is the most important need which can be emphasized by this paper. The men and women and the boys and the girls of our cities and towns need the schools not five hours a day and perhaps 200 days a year, but twelve and fifteen hours a day and every day in the year. The school represents both an economic and social investment. Their limited use means slight returns; their wider use means large returns in community intelligence and in opportunities for social and economic advancement. Under the present policy of public indifference to school conditions and needs, the education and health of our future citizens are under the general charge of school committeemen who give but a few hours a month to this gratuitous service. With the schools as community centers, school conditions and needs will be well understood by the people; improvements will be made in buildings and in supervision; every school will provide for continued education and recreation both of pupils and of adults; schools will serve communities in various kinds of expert service and it will be possible to deal intelligently and effectively as communities with such health and social problems as can be solved only with increased community understanding and responsibility.

THE SCHOOL BOY AND HIS MUCOUS MEMBRANES

BY

JAMES A. BABBITT

It is the purpose of this paper to strike directly to the heart of a most consequential phase in the hygienic welfare in the child and not to deal in generalities. To the trained medical observer, the mucous membrane presents two functions of paramount importance—one of absorption and one of resistance. The picture of vascularity too is most clearly portrayed in the almost transparent mucous membrane.

The very essence of body growth, the fundamental principles of nutrition, are concentrated in the meaning of the term "absorption," while the term "elimination" conveys all the potential activity in resistance to foreign attack of every sort, whether from bacterial or chemical poison. On the other hand, physiological integrity is in a measure a relative comparison, as good blood flows along with bad, with an index high or low as measured by the changes in metabolism.

The third suggestion of circulation leads us into the almost labyrinthine study of the great vasomotor system. In this lies the very principles of organic life, whose variations measure degrees of heat, moisture, nutrition, nerve-sensitiveness and even body weight.

Crystallized, the terms "absorption," "eliminative resistance" and "vasomotor activity" adorn the great signboards upon the mucous membrane path.

Granting, then, the importance of the topic, a classification of focal points might include:

- First. A region about the sinuses.
- Second. The naso-pharynx, eustachian tube and middle ear.
- Third. The laryngeal area, including the inter-laryngeal space, arytenoids and lingual tonsil.
- Fourth. The bronchial respiratory membrane.
- Fifth. The lining of the alimentary tract.
- Sixth. The genito-urinary area.

For the purpose of this paper, these will be designated as the:

Turbino-sinus,
Oto-pharyngeal,
Peri-laryngeal,
Tracheo-pulmonary,
Gastro-intestinal, and
Genito-urinary, respectively.

The turbino-sinus area collectively includes the so-called superior and middle meatal passages of the nose where the superior and middle turbinates closely approximate the nasal septum, and several important openings are found all leading into the accessory sinuses of the head.

These are the vestigial remains of the more highly developed animal olfactory organ, having become more or less attenuated or devitalized in the process of evolution and perhaps serving in a certain sense compensatory as reservoirs of the upper air passages. These lined with mucous membrane, normally contain but slight secretion and drain through small openings into the upper nasal passages. They serve, too, according to the views of many, in the capacity of resonating chambers, and are called the frontal, anterior and posterior ethmoidal, sphenoidal and antral sinuses, respectively. Their engorgement in acute congestion produces the too familiar symptomatology of a cold in the head. The nasal aspect of these upper nasal air passages is a very important one, as the mucous membrane here governs the special sense of smell, secretes the necessary mucous of the nose, and aids in warming the air and freeing it from foreign particles.

It has been the privilege of the writer in several hundred cases, in connection with special work, to relieve certain malconditions which here occur from anatomical and physiological causes. The passage itself is a comparatively small one and several causes modify it in pathological degree. Such causes are obstruction in the naso-pharynx from adenoids, traumatic deviations of the septum, pressure from a high arched palate bowing the septum between it and an unyielding cranial bone. The result is a pressure irritation upon most highly sensitized erectile tissue. Specific neuroses are produced beginning in simple inflammation and often leading to suppurative modifications of the sinuses. The familiar hay fever and asthma, anosmia, general nasal catarrh and optic neuritis are frequently traceable to pressure in this locality.

Closely related to the above is the tract which might be labeled the oto-pharyngeal tract, consisting of the naso-pharyngeal vault, eustachian tubes and the middle ear. The tympanic membrane carries an external layer of epithelial, a middle fibrous, and an internal serous or mucous layer, so that it belongs to our topic. Just as a healthy digestion never knows the existence of a stomach, so a mucous membrane must be negatively rated by its pathology and the pathology here concerned is the pathology of the tinnitus of eustachian catarrh, the mouth breathing occasioned by the over-lymphoidal development at the site of the pharyngeal tonsil and the disturbances of an unequal air pressure in the middle ear, and even an occasional acute inflammation there.

The peri-laryngeal site is perhaps a poor designation, but it comprehensively includes the area leading from the pharynx to the trachea. Here lie the cords and the interarytenoid spaces so readily affected by tubercular and specific lesion, and the often overlooked, but important, lingual tonsil. It is the portal of air entrance, the site of vocal integrity.

The tracheo-pulmonary has been brought into thrilling notice within the last few years in the study of "The Great White Plague." It might perhaps not be included in the mucous areas save in relation to the larynx, but is of consummate importance in the physiology of elimination and circulatory aeration.

The gastro-intestinal tract presents a topic of such magnitude as to deserve a special paper to be presented by the experienced abdominal surgeon. He should rather be a pastmaster of surgery who has outstripped his early eagerness for operative technic, to delve in the great realm of toxemic science; who has almost forgotten the appendix in the interest of the relative importance of stomach and colon, the duodenal outlet of pancreatic and biliary secretion, and the great problem of abdominal ptoses. The mucous membrane here submits to the battering of imprudently forced digestion and the long residence of ptomainic products with such patience that we regard it with indifference and only reach a stony wall in the surgical exigencies of abdominal obstruction.

The genito-urinary tract is one which is generally prudishly avoided save by medical people. It is human nature to regard this highly sensitized area as one of social rather than physiological importance, but it has a definite bearing in a comprehensive mucous membrane study upon child welfare.

This brief analysis will suffice to individualize these focal points. Their study presents a close analogy throughout. Our mucous membrane consists of a delicate layer of columnar epithelial cells, resting upon a fibrous basement membrane, a submucous stroma interspersed with glands and underlying muscle fibres varying in locality. It is richly supplied with blood vessels often in the form of cistern channels, and reveals throughout its surface ducts which lead to glands beneath.

Certain writers in classifying the nerves of the body have discussed the presence of those conducive to a general indefinable body discomfort. This possibly might be analyzed in better form by referring to conditions of depressed eliminative activity closely analogous to the growing pains of adolescence. Let us assume that we may have a most frequent condition of general nerve irritability, punctuated now and then by definite nerve explosions. Here and there in the mucous membrane tract, notably the turbino-sinus, the gastro-intestinal and genito-urinary areas, irritative conditions may produce a constant definite nagging

from nerve irritation which affects the whole body economy sometimes almost subconsciously, and a scientific student of internal medicine will search for these points of irritation and reduce the systemic disturbance by relief of a congested upper nares locality, intestinal stasis of undigested products, the elongated tight foreskin or a prolapsed rectal membrane, but this will be alluded to in summarizing therapeutic possibilities.

Your speaker ventures to suggest that possibly the statement "A man is as old as his arteries" might be paraphrased into one like this: "A boy is as well as his mucous membranes are healthy," meaning that the healthy absorption of nutritional products maintains a normal balance of salts necessary in the body as well as glycogenic fuel and regulated leucocyte count, an elimination sufficiently active to clear the body interspaces of that vast array of some 60 or more intermediate albuminoids which, by their presence, produce a chemical depression in metabolism, and finally a normal and healthy activity of the great vasomotor system which in its intimate connection with the ductless glands governs the very core of organic process.

To further the value of this paper in connection with one assistant Mr. Lathem, some 50 cultures were made from the naso-pharyngeal tracts of apparently healthy individuals as well as those in the varied forms of disease. Out of twelve apparently normal individuals, cultures revealed the staphylococcus (albus and aureus) one or both in ten instances; in five out of the twelve, the streptococcus was found; in four the diplococcus (probably the diplococcus pneumoniae), the bacillus typhosus in one, and a tetrad form in one; in these cases the bacillus tuberculosis not growing well on the agar medium, was not found, but is frequently present in healthy throats. These bacilli, in varying type of virulence, were apparently innocuous, as there was no evidence of any menace to the situation. This at least furnished proof of the resistant membranous power and invites further study of the natural antiseptics of mucous secretions.

In deduction from the above study, it would seem most desirable to attain some form of mucous membrane index or gradation by which a satisfactory registration could be made in a hygienic examination of school boys. Such analysis should mark the pallor, septic indications, irritability, sclerosis, points of inflammation, degree of mucoid or purulent secretion, glandular activity, etc., in the naso-pharyngeal and oral cavity. It should similarly review the gastro-intestinal, genito-urinary and other areas, and should answer in positive form the following questions:

How much can and should be learned of a boy's hygienic condition by the surface of his mucous membrane tract?

How much can the natural resistance in this tract be depended upon to maintain a plus hygienic balance?

What deleterious influences taxing this resistance can be normally forestalled?

How much responsibility in the general vital index can be rationally assigned to physiological variations in the surface?

What prohibitive measures in mental, recreative and dietetic regimen should be instituted as a result of the local picture?

What contribution to longevity may be assumed by the proper regulation against mucous membrane attack?

Our great problem is health and health paramount to any degree of mental or muscular superiority—a noble, happy, physical life.

A FREE NOSE ESSENTIAL TO THE PREVENTION OF DEAFNESS, ADENOID HYPERTROPHY AND KINDRED TROUBLES

BY

B. ALEXANDER RANDALL

It is more than half a century since Catlin learned from his studies of the Indians the evils of mouth-breathing and the essay was written entitled, "Shut Your Mouth and Save Your Life!" Soon Meyer's classic paper on "Adenoid Vegetations of the Pharynx-vault" set the matter in definite and unavoidable form before us. Since then this subject has never lacked for exponents, although there is room to doubt if their zeal has always been matched by their discretion. We have to-day hundreds who as school physicians, family practitioners or as specialists are recognizing by thousands the children suffering for better nasal freedom and are advocating operative removal of adenoids and tonsils; the laity in school and out have taken up the crusade and the hospital reports record such operations by the thousand. Much of this, most of it perhaps, is good. Deafness and other ills, moral as well as physical, are to be banished from the earth, if we can believe the enthusiasts; and the remodeled children are destined to stand in little need of the rising tide of eugenics. May some of us live to see the happy day!

Aside from the duty incumbent upon us to learn to prevent as well as to cure these conditions, there rises before the close, unenthusiastic student of the matter the question, why after adenoids have been removed should they return? Our younger operators, confident in their up-to-dateness, answer, "They do not if thoroughly removed." The practitioners whose private patients may need a "cure" of this sort every year or two accept this statement insofar that they usually select a different operator each time—perhaps with none too happy result. The symposia in the specialist societies are interesting in the utter variance of views most confidently expressed, but unity of opinions as to most details is still far off, and almost nothing is heard of prevention. Yet medical men as a rule busy themselves most with efforts to "kill the goose that lays the golden egg" for them: it is not selfishness that holds them back from preventive measures. They have too rarely sought adequately for the *causation* of adenoid enlargement.

There are doubtless many causes that can contribute to the overgrowth of tonsillar tissues and many consequences that are apt to be

confounded with these causes; but there is very little answer ready for the question: Why does the third tonsil in the vault of the throat earliest as a rule cause trouble, the lateral or faucial tonsils usually later, and the lingual tonsil rarely before middle life? As these three constitute an "adenoid ring" (Waldeyer) of nearly identical structure, the location must have a primary influence in determining their disease involvement; and the relation to the nose is so close and essential that we must look to it for explanation of the disturbance of the vault-tonsil. "Not at all," answer some specialists, "the nose is secondarily obstructed and involved because of the interference of the adenoid hypertrophy with the proper free nasal breathing." Vicious circles do not always show the beginning and end, since the end is the new beginning. We must study these troubles before they are fully developed, if we are to pick up the thread and trace it truly. It is natural that the pharynx-vault should share the congestions and inflammations of the nose in front or the throat below it and that its vascular adenoid mass should swell obstructively in response. But such congestion must become chronic before it can cause *overgrowth* of the tissue. I know of a colleague who undertook to demonstrate with the mirror to the family physician the adenoid hypertrophy for the removal of which he had placed the patient on the operating table. No demonstrable enlargement was present. Had he given the ether without such examination, the head congestion would have renewed some of the enlargement in the vault and he would have removed a very demonstrable amount of adenoid tissue, though less probably than expected. He would have been none the wiser and it is doubtful if his patient would have been the better for it. I heard a British surgeon complain that he "had put atropine into the eyes of a convergent squint case and cheated himself out of the operation; but would never do it again." I hope he was jesting, though ponderously. If the throat surgeon would make this renewed examination after due preparation of his patient, many an operation would be postponed—perhaps indefinitely.

Constantly we see children who are mouth-breathers more or less habitually, but scrutiny of the air passages shows that the adenoid tissues only share in the general congestive thickening and are in no more need of radical removal than are the adjacent structures. Let such conditions continue, and we may be quite sure that consecutive overgrowth will most affect the tonsil structures; but paint them all vigorously with an astringent such as silver nitrate, and the "adenoid vegetations" will return to normal as rapidly as any of the other tissues of the throat. Those who will read Meyer's original essay will find that early and late he trusted to silver as much as to the "cold steel" of which he is quoted as the great apostle.

Much importance has been assigned to rarefication of the air in various parts of the upper air passages as causing structural changes and deformities. We are told that when the nose does not permit of free passage of the air, the preponderant pressure in the mouth can force up the bony palate, giving it a high narrow configuration. The portraits of the Emperor Charles V and his descendants have been cited to prove "adenoids" in the Habsburg family as the cause of their "jimberjaws" and other degenerative stigmata. At the present day orthodontia is in full swing, with broadening and enlarging the nasal passages as one of the benefits to be obtained by broadening the dental arch. Good. There is probably some truth in these contentions; but there is also much chaff. It is well that heredity, so often overworked in these days, should have occasional resting spells. Yet we need only study the living parents at hand to make sure that many such characteristics as narrow high palates, small narrow nasal chambers and small throats are as absolutely parts of the family type in children as their more external features of high cheekbones, aquiline noses or Hibernian length of upper lip. The parents may have retained perfect hearing and escaped catarrhal tendencies to which the younger generation inclines, showing that *environment* has no small weight in determining the results. The huge growth in the proportion of urban population has its bearing on this, as on many another matter; only partly relieved by the vacation exodus increasingly in vogue, with its occasional return to less artificial conditions.

Let us study any case of acute nasal stoppage from cold-taking and we must be struck by its instant effect in causing congestive enlargement of the tissues of the pharynx-vault, as witness the changed "nasal" tones and imperfect pronunciation of consonant sounds. Free the nose, even with such questionable drugs as cocaine and adrenalin, and the throat is prompt to free itself. Respiratory exercises, making the most of imperfect nasal passages, can work almost as rapid betterment, with less chance of undesirable reaction. Gargling, especially with hot gargles, which carry the astringent action of the heat much beyond where the fluid itself reaches, can aid in clearing the passages and forestalling any lasting harm from the obstruction. All of us have passed safely through countless attacks of this sort, until we find it hard to believe that they can be anything but trivial and fleeting. Yet watch them in a neglected or unresponsive case. The worst stage will pass off, but leave a notable degree of obstruction; this will be reinforced by repetitions and soon the open mouth and imperfect utterance will mark the habitual mouth-breather. The hanging cheeks may press upon the dental arches hindering them from broadening, but it is much more important that the muscular tongue is not almost constantly pressing

them apart from within. The palate arch increases in height as the sockets develop for the longer teeth, but does not proportionately broaden; the nasal passages above may also fail to gain needful size, which the broadening and lowering palate should naturally force upon them. The stuffiness of their swollen lining becomes chronic and the altered secretions, unremoved by the passing of the air some two thousand times an hour, aid in obstructing and irritating the nose and throat. The very passing of this respiratory air through the mouth serves to make a partial vacuum in the vault of the pharynx, just as the mercury air pump acts to empty our electric light-bulbs and give us our most complete vacuum. Congestion in the vault is maintained and increased; overgrowth of the tonsillar tissue there is inevitable, and this in spite of operative removal. Enough is always left at the sides, even by a brutally "complete" operation, to be drawn towards the middle line by the scarring and there to overgrow as greatly as before. *A child with a stopped-up nose can grow a new adenoid mass every year for annual operative removal.*

This is the epitome of my thesis. Keep the nose free and there will be no adenoid hypertrophy, primary or secondary, and the sequent troubles of throat and ear will be even more safely avoided. The mere sniffing of steam at the onset of a cold will largely forestall its obstructive effect; the hot gargling will be equally efficient for the structures farther back. A little caution as to exposure immediately afterward will prevent trouble from the sensitiveness for a while present. Teach the child gargling and nose blowing early; if they are used, they are not likely to be abused and can save much after-treatment.

PREVENTION OF EAR TROUBLES AMONG SCHOOL CHILDREN

BY

ERNEST DE WOLFE WALES

Ear trouble among school children can be prevented to a limited extent, by the enforcement of proper laws, by a system of education and by coöperation of citizens, especially parents, teachers, and physicians. Since the ear is but a part of the whole organism, hygienic measures which keep the organism as a whole healthy, also prevent troubles of the ear.

The ear naturally divides itself into three parts: An external part which includes the auricle and external auditory canal, the middle ear, including the eustachian tube, tympanic and mastoid cavities, and lastly the internal ear with its sensory nerve endings.

Troubles of the external ear may be prevented by cleanliness of the head and auricle. Pediculi frequently cause eczema, also enlargement of the glands about the auricle. Scratching the auditory canal and attempting to clean the canal with matches, toothpicks, hair pins or ear spoons, should be prohibited. The old saying that "nothing smaller than the elbow should be put in the ear still holds good." Scratching often causes eczema or circumscribed or diffuse suppuration of the canal. Wash the auricle and meatus with a damp cloth, but avoid getting water in the auditory canal. Poking the finger or wash cloth into the canal tends to push the normal cerumen more deeply into the canal and once it is lodged in the bony canal the mass is not vibrated by the movement of the jaw and so does not tend to come out naturally; again, if water daily enters the canal, it tends to dissolve the cerumen and then by evaporation leave a deposit of cerumen over the drum membrane which later becomes a plug. If the canal is not disturbed, the wax tends to form into little balls by the action of chewing, and then roll out of the canal. This is Nature's way of disposing of the wax. A child with a perforated drum membrane should never dive or swim, especially if the water is of a temperature much colder than the body because of the violent vertigo such a plunge may cause by stimulating the vestibular nerve. Many a good swimmer has drowned in this way. Water tends to macerate the dermal layer, and so keep up an eczema. Olive oil or any oil should never be dropped in the canal. As Körner says we have no rusty wheels in the head to be oiled.

Troubles of the middle ear are avoided by all measures which tend

to prevent irritation of the respiratory tract, especially the nose and naso-pharynx. Hence the necessity of good ventilation to prevent the nasal mucosa from being overworked; the air should be free from dust, sufficiently moist and warm. Besides the external irritants, the nose and naso-pharynx may be irritated by circulatory disturbances, the result of general diseases which give rise to congestion of the mucous membrane of the nose and naso-pharynx, such as heart lesions, chronic constipation, gastro-intestinal disturbances, latent or chronic tuberculosis, etc. Adenoids, especially the lateral masses, close the eustachian tube and so interfere with the functions of the middle ear. Troubles of the middle ear would be greatly lessened by correct blowing of the nose. The child should be taught to blow one side at a time provided the side blown is not closed by inflammation. Do not interfere with the air current on the side blown by pressing the side of the nose or by intermittent squeezing. The blowing should be gentle. Hard blowing or intermittent blowing is liable to send mucous from the naso-pharynx into the tube and so infect the middle ear. Constant hard blowing stretches the drum membrane, thus causing deafness.

Troubles of the internal ear generally occur by extension of suppurative troubles from the middle ear or directly through the circulatory system. The auditory nerve is affected often in leukemia, meningitis, mumps, syphilis, scarlet fever and oto-sclerosis.

Nerve deafness luckily is the rarest form of deafness and is least preventive.

Practically all ear troubles are manifested by deafness and, so by functional tests of the hearing power, we have an easy method to tell if there is any trouble. The diseases most common to school children come on so gradually that unless there is coöperation of the parents, school teachers and physicians the ear trouble may be neglected and so lead to permanent injury. I shall take up in order the duties of the parent, teacher and physician in the prevention of ear troubles. First, parents should properly ventilate and clean the home and properly bathe, clothe and feed the child. The parents should note the growth and weight of the child and record the same. They should teach the child to blow the nose properly. Should note if the child breathes through the nose, if the sleep is restless or if the child breathes hard or snores. The child should not spit or continually hawk or sniffle. Rasping the throat increases the blood supply of the naso-pharynx thereby increasing the mucus. Children should never sit before an open window if riding in a car or be exposed to draughts because the body cannot adapt itself to cold on one side and heat on the other, thereby predisposing them to earache. The teeth should be brushed after meals. Rubber shoes and protection from wet and cold in stormy

weather. Dress according to the weather. It takes some knowledge and a big purse to keep school children healthy. Above all, the child should have plenty of sleep, plenty of good simple food, and opportunity to play, for play is the most healthful exercise.

The teacher should see that the school room is properly clean and ventilated. The inattentive child should be noted. Inattention naturally accompanies deafness. The teacher should also carefully observe whether the child learns more readily by written or oral exercises. A child backward in instruction given orally suggests deafness. Speech defects may be due to deafness. The most common deafness is the "S" deafness; such children not hearing the letter S sound cannot pronounce it. All unnecessary noises should be avoided. Recitation in chorus does not harm a healthy ear, but may tire a diseased one. In my opinion, recitation in chorus is not a mental stimulus even to a child whose hearing is normal. The teacher should not shout, neither should he speak so low that those in the distant parts of the room cannot easily hear him. Deaf children should sit near the instructor. Corporal punishment has been abolished so that ruptured ear drums from slaps and blows on the head need not be discussed. Children with head colds should be sent home so as not to infect healthy children.

The physician should play an important part in the prevention of ear troubles among school children, because he most often sees the child at the beginning when treatment does most good. The majority of general practitioners do not recognize ear troubles unless they see pus flowing from the meatus or when there is marked deafness, and even then, they often do not know how to treat the patient. This may be accounted for by the fact that our best medical schools give only from six to twelve clinical exercises and a few lectures in Otolggy. Thus it happens that few physicians can see the drum membrane, and many acknowledge that they have never seen one.

If a child has a temperature above normal, the drum membrane should be examined, more especially when there is pain in the region of the ear or teeth; also in all infectious diseases. An inspection of the drum membrane is just as essential as an examination of the chest, heart or kidneys. This inspection should be made at each visit. Deafness, tinnitus and vertigo also direct the attention to the ear. Functional tests should be made on all school children, at least once a year. This test should include the voice tests, as well as the tuning fork tests and high and low limits. A diagnosis is made from inspection and the hearing tests. Even though the school inspector has called attention to functional defects, the child may never receive treatment because of parental neglect or from the physician's faulty unintelligent treatment, treatment for the sake of treatment or useless over-treatment. Neglect

of chronic ear troubles is very common. The expression "they will outgrow it," "the discharge can't be stopped," "it would be dangerous to stop the discharge," are phrases frequently heard.

Few specialists make hearing tests but treat for the sake of treatment. If the treatment does no good, it generally does harm. Treatment which does not improve function in most ear troubles is useless. Deafness from over-inflation, from inflation with high air pressure, from oto-massage, and neglect of naso-pharyngeal treatment accounts for much deafness. One reason why deafness does not disappear after the removal of the adenoid growth is due to the failure to remove the lateral masses around the eustachian tube and then after the adenoid tissue is removed inflation is neglected. This inflation should be done only after the naso-pharynx has healed, and stopped as soon as the hearing becomes normal. Faulty treatment of the nose accounts for some ear troubles. The nose is the most abused organ in the body when it comes to treatment. To destroy is the motto of most physicians, if not by cutting, by cauterizing with galvano-cautery or acids. Function is the last thought. These faulty treatments can only be mentioned briefly, enough to suggest that education of the physician might prevent much of the ear troubles among school children.

THE REDUCTION OF INFECTIOUS RISKS IN SCHOOLS

BY

ROWLAND G. FREEMAN

That schools are perhaps the most important agency in the spread of contagious diseases is a generally accepted fact. This unfortunate function of the schools may be easily demonstrated by a study of the charts of incidence of these diseases with relation to the school year, and I have inserted charts showing the incidence of certain contagious diseases in both America and England in relation to the school year. It is here shown that most of these diseases begin to spread as soon as the schools open and have their greatest incidence during the latter part of the school year.

Chart No. I, indicating the Monthly Morbidity of Diphtheria, Measles, Scarlet Fever and Whooping Cough in New York in 1910,

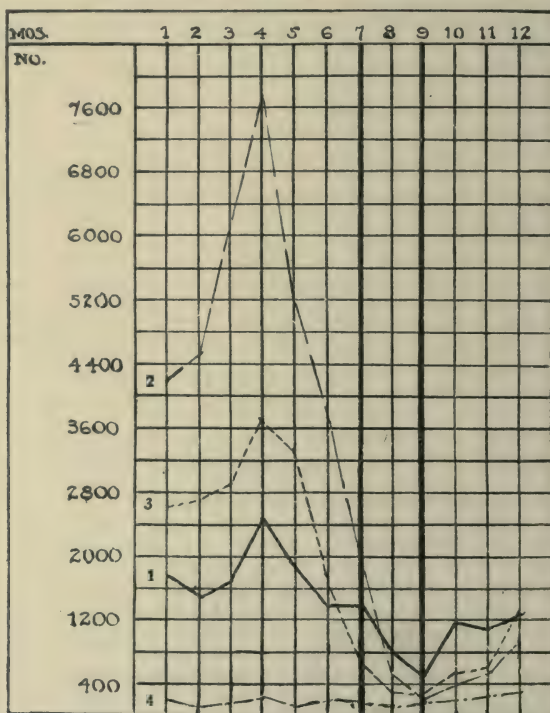


Chart I.—Monthly Morbidity in New York in 1910 from diphtheria 1, measles 2, Scarlet fever 3, and whooping cough 4.

shows all these diseases, except whooping cough, to be least frequent after the summer vacation in September and gradually increasing throughout the winter term to April during which month they reach their highest point. After that, with open windows and better ventilation, they diminish in frequency. Just why the whooping cough curve did not react with these I do not know.

A confirmation of this chart is shown in that of the average monthly mortality from the same diseases in New York during a five-year period 1903-1908. Here again it is true for all diseases, except whooping cough, that the least mortality is recorded in September, the mortality increasing rapidly and reaching its highest point for diphtheria in February, for measles in April, and for scarlet fever in May, and then rapidly diminishing. Whooping cough alone shows a higher mortality in summer but many of the cases that died in August may have been contracted at school in June as there is a period of a month between the time of exposure to the disease and the beginning of the paroxysmal stage.

Singularly enough when we refer to the chart showing the monthly mortality from these diseases in London for a five-year period, 1905 to 1910, we find the same increase during the school year, and whooping

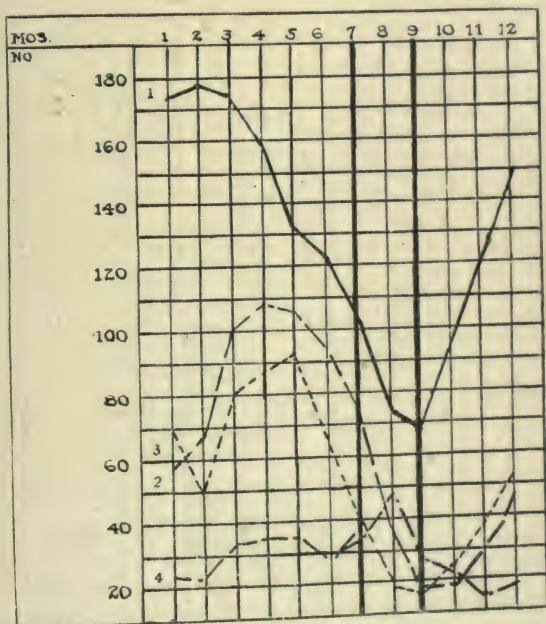


Chart II.—Average Monthly Mortality in New York, 1903-1908, from diphtheria 1, measles 2, scarlet fever 3, and whooping cough 4.

cough following closely the measles curve as we saw it in the New York Chart.

In all of these charts the summer vacation period is enclosed by heavy perpendicular black lines which show well the slight incidence and mortality from these diseases during the long vacation period.

Children that are well housed are little liable to these diseases, excepting the common cold, until they or some member of their family goes to school, and from this time they begin and run through the whole

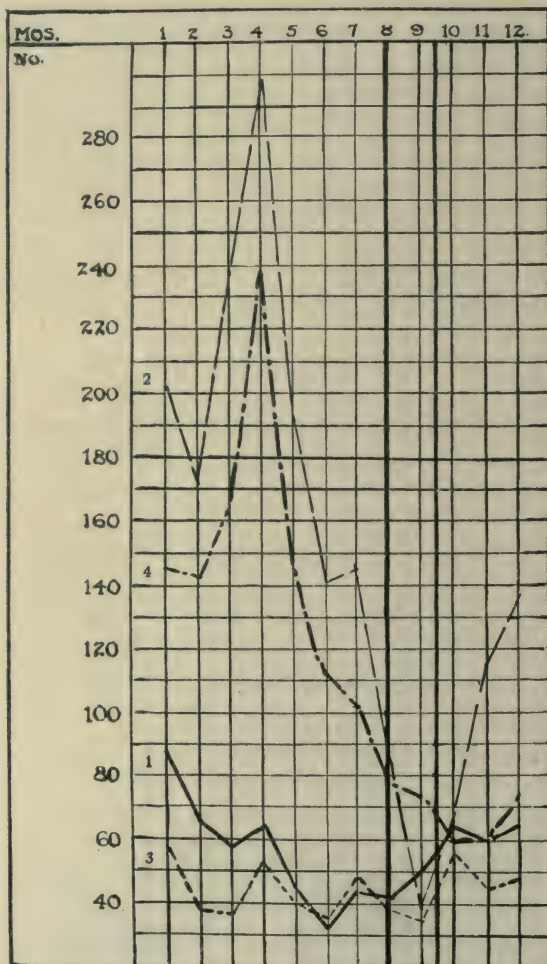


Chart III.—Average Monthly Mortality in London, 1905-1910, from diphtheria 1, measles 2, scarlet fever 3, and whooping cough 4.

range of the common diseases to which most children gain immunity only through an attack. Thus measles, mumps, whooping cough and chicken pox are usually acquired before the period when the child leaves the lower grades of the school.

While it is probable that, so long as these diseases are very prevalent, almost all children must have them it is still likely that some of these diseases might gradually be eliminated by efficient measures in the schools. The ordinary regulations concerning contagious diseases in our schools, where they are enforced, are antiquated and involve a greater loss of school days than is necessary for adequate protection, while they pay little attention to the newer knowledge of the mode of conveyance of these diseases.

I wish to present to you a scheme for reducing to a minimum the risks of the conveyance of contagious diseases in schools with a recommendation for a modification of the period of exclusion of the children exposed.

There seems little doubt that all the common contagious diseases are really sputum diseases which are carried by fairly direct contact of a person carrying the bacteria of one of these diseases in his sputum with another person who is not immune to the disease. The carrier is usually a person in the first stages of the disease. He may be in the acute stage of the disease, or in convalescence, while in some rare cases the carrier may never have had the disease. He has the germ in his sputum but on account of his resistance does not become sick himself but is a danger to those with whom he comes in contact. A good illustration of the limited area of such contagion occurred in one of our schools in connection with measles which is considered one of the most contagious of all contagious diseases. A boy attended school with beginning measles but without sufficiently marked cold to secure his exclusion. The boy who sat in front of him had had measles and so did not contract it. The boy on his right, the boy on his left, and the boy who sat behind him all came down with measles and no one else in the class caught measles from him. This incident shows well the limited area of contagion, and corresponds accurately with bacteriological experiments made to demonstrate the distribution of the bacteria of sputum from an individual.

That there is much conveyance of disease through dust, excepting as dust irritates and injures the mucous membrane and thus renders it more susceptible to infection, or through clothing or books is unlikely. If this is true, a matter of great importance in the elimination of these diseases is the instruction of the children as to the dangers of sputum, and all children on entering school should receive such instruction. Such instruction should emphasize the importance of the nose as a bac-

terial filter and the danger of mouth breathing, the enormous number of bacteria in the sputum and their distribution in sputum during talking, sneezing and coughing and in kissing. Also the range of distribution as shown by bacteriological experiments in front of the subject, on both sides of him, and behind him.

The first indication of most of the common contagious diseases to which children are liable is the presence of what we call a cold. The children are apt to cough, they may have a nasal discharge, their eyes may water. Such symptoms with some modifications mark the beginning of the common cold, of influenza, of whooping cough, of measles and of scarlet fever. So that if we are to eliminate contagious diseases in schools it is evident that no child with a cold should be allowed at school. By the rigid enforcement of this rule a large proportion of the contagion at the beginning of these diseases may be avoided, and it is probable that the beginning of these diseases is their most contagious period.

While the most important points in the elimination of contagious diseases are the instruction of children as to the dangers of sputum, and the elimination of all colds from school, such precautions will not prevent the spread of disease from mild cases with little or no indication of illness. Such children will, in spite of precautions, come to school and convey the disease so that the question arises as to what action is to be taken with children who have been exposed to a contagious disease. It may be assumed that only those children in fairly close contact with the sick child will probably have caught the disease, so that the exposure rarely extends beyond the class to which the child was assigned.

In some carefully regulated schools it has been customary to exclude children who have been exposed until after the period on incubation of the disease, and this has involved the wasting of many school days, especially in the case of certain very mild diseases with long periods of incubation such as German measles and chicken pox, and on this account little precaution has been taken often to prevent the spread of these diseases.

The period of incubation or time elapsing between exposure and the breaking out of the disease is fairly well defined. In scarlet fever for instance this period is very short being usually five days but sometimes only two or three days, while in other diseases the symptoms rarely develop until ten days or two weeks after exposure. In these latter diseases it is, therefore, quite unnecessary to isolate the children immediately after exposure.

Referring to the table giving a list of common diseases of children, the incubation period, and the period when children should be kept out

of school after exposure, we note that scarlet fever usually develops in three or four days so that if a pupil is kept from school for six days after exposure to scarlet fever there is very little danger of his developing the disease from that exposure.

In measles the incubation period is longer, from ten to seventeen days, while a large proportion of the cases develop the first symptoms on the eleventh day, these symptoms consisting not in the appearance of a rash but a slight rise of temperature, cold in the head and throat and of characteristic spots in the mouth named after the physician who first brought them to our attention as an important early diagnostic sign, Koplik spots. It is evident then that it is practically safe for a child to go to school for a week after exposure to measles, but that after the eighth day any child that has not had measles should be isolated and if he does not develop the disease should still be kept from school until the eighteenth day.

A large proportion of the cases of German measles develop the disease on the seventeenth day after exposure while they may develop it at any time between two and three weeks after exposure. Such children may safely be allowed to attend school for nine days after exposure but should be kept away between the tenth and twenty-second day.

Chicken pox with a similar duration of the incubation period should require the same period of isolation from school, that is from the tenth to the twenty-second day.

Mumps usually has a still longer period of incubation, from seventeen to nineteen days, so that any child who has not had this disease and who is known to have been well exposed to this disease should be isolated from the twelfth to the twenty-second day.

Although these facts concerning the period of incubation of diseases of childhood have been common knowledge for many years no effort has been made to apply them to the school problem, so far as I know, excepting in the case of the Charlton School in New York. This school, through the exclusion of children with colds and the isolation of children exposed to contagious diseases, has never had an epidemic and has had very little illness among its pupils. With about two hundred children during the year 1908 to 1909 there occurred among its pupils only 14 cases of contagious disease. During 1909 to 1910 twelve cases, only four of which were contracted from exposure at school; during 1910 to 1911 there were again twelve cases but none resulted from exposure at school. In most schools there is no attempt to limit school sickness and loss of school days by isolation of children known to have been exposed to contagious disease, but such schools have an unnecessarily large loss of school days and much preventable sickness.

To obtain a good result from the application of these rules care must be taken that children isolated from the school after exposure do not come in contact with the other children of the same school at parties or other meetings. It may be added that the dangers of exposure at school are markedly lessened by the ample ventilation and free moving air in the school room and that the out-of-door schools have little tendency to develop epidemics.

In conclusion the following points may be emphasized:

1. Children should be instructed at an early age concerning the danger of sputum as a carrier of disease.
2. Children with colds should be excluded from school.
3. Children exposed to disease at school should be kept from school, not during the whole period of incubation of the disease, but only during the period when the disease is likely to develop, as shown in the table.

DISEASE	Incubation Period	Period During Which Exposed Children Should Be Kept out of School
Scarlet fever.....	2 to 6 days. Most often 3 to 4 days	1st to 6th day
Measles.....	10 to 17 days. Usually 11 days	8th to 18th day
German measles.....	2 to 3 weeks. Usually 17 days	10 to 22nd day
Chicken pox.....	14 to 16 days	10 to 22nd day
Whooping cough.....	7 to 14 days	1st to 14th day
Mumps.....	3 to 24 days. Usually 17 to 20 days	12th to 22nd day
Diphtheria.....	2 to 5 days	1st to 5th day

ACCIDENT PREVENTION AS RELATING TO CHILD WELFARE

BY

MARCUS A. DOW

School hygiene, or a systematic movement toward betterment of the physical welfare of the children in schools, is a most laudable and progressive undertaking. The work that has been done, and is being undertaken in this direction, merits the highest commendation and is typical of the humane, uplifting progress of the American nation, as well as other civilized nations of the world. But it is a movement that is still in a state that admits of many possibilities for enlargement of its scope and there are doubtless reforms without number that can be successfully introduced into the schools, all of which are meritorious and will work for the immediate betterment of the children's welfare as well as the improvement of a future generation.

There is, however, one branch of this welfare work that should not be overlooked and that is the prevention of accidents or the preservation of the lives and limbs of the children. I wish to emphasize the importance of work along these lines and the fast growing need of concerted and systematic effort on the part of our educators to reduce to a minimum the reckless spirit, thoughtlessness and carelessness which is the cause of the needless killing annually of thousands of persons, largely children of tender years, and permanently injuring thousands more.

The subject of accident prevention is by no means a new one and yet it is only in recent years that much systematic and constructive work has been done in this direction. The work which has been undertaken has, for the most part, been confined to industrial establishments, railroads and the like for the benefit of their employees or that part of the public which patronizes them. There has developed during the past few years, however, a movement for greater safety which has rolled like a mighty wave across the American continent, catching in its embrace, nearly every great railroad and industrial establishment. Remarkable results have been obtained in the actual reduction of industrial accidents through the education of industrial workers along the lines of safety; in many instances large plants and railroads showing decreases ranging from ten to forty per cent. in casualties in one year. In a very brief period, the plan of systematic education of industrial workers in accident

prevention has proven effective and successful. Why should it not be just as successful if applied in the schools?

The great need for a concerted, well defined plan of teaching school children "safety," "prudence" and "carefulness" is apparent when the great number of lives sacrificed annually is considered. While I will try to treat the subject in a general way and include all kinds of accidents in this discussion, I am able to give, perhaps, more detailed information regarding railroad accidents. The reports of the Interstate Commerce Commission for the last twenty years, according to a paper read by one of its members at a Coöperative Safety Congress held recently, show that 86,733 persons were killed and 94,646 persons were injured while trespassing on railroad tracks or a total of 181,379 persons killed and injured on the railroads of the United States through their own carelessness in trespassing on railroad property. It seems to be a mistaken idea in the public mind that these persons are all "hoboes" or "tramps" or other persons of a worthless character, who spend their time wandering aimlessly about the country and it is no great loss to the country if there are nearly a hundred thousand of them killed in twenty years and as many more seriously, if not permanently injured. But this idea is wrong. In order to ascertain the status of the majority of trespassers on railroads, an official on one of the great railroad systems of the country examined the reports in the cases of fatal injury to one thousand trespassers and found that practically 75% of them were citizens—wage earners living in the vicinity of where the accident occurred—or children of tender years. Based upon the cases examined by that official and the reports of trespassers killed on another great railroad system where a similar investigation was made, it would appear that at least 25,000 of the railroad trespassers killed and injured during those twenty years were young people under eighteen years of age while over 120,000 were citizens—wage earners living in the vicinity of where the accident occurred—and about 36,000 were tramps or hoboes. More complete statistics furnished by the Interstate Commerce Commission for the years 1901 to 1910 show that there were 13,000 children under the age of fourteen years killed and injured while trespassing on railroads in the United States and 20,000 killed and injured who were between the ages of fourteen and twenty-one, making 33,000 minors who needlessly met death or serious injury in ten years from that cause alone.

But the railroads do not begin to furnish all of the accidents that result in serious or fatal injury to children and others. The dangers that beset the child in daily life are numerous and varied. Matches, bonfires, automobiles, street cars, vehicles drawn by horses and

many other things contribute to the huge list of deaths and injuries to children from accident causes. Unfortunately complete statistics covering the number of persons injured in accidents not occurring on railroads in the United States are not available as there has not been much uniformity in the matter of recording such accidents. In Great Britain the statistics covering the United Kingdom show that in 1909 there were 1,151 persons killed and 26,872 injured by street vehicles of all kinds and in 1911 that there were 1,557 killed and 33,653 injured from the same cause. These statistics are not complete as to showing what proportion of those killed and injured were children. In Germany, however, we find statistics show that of the 732 persons who were struck and killed by electric street cars from 1905 to 1909 there were 409 or more than 50% of them children under thirteen years of age. Conditions in American cities are certainly no better than in European cities. In New York City alone there were 226 children killed and 479 seriously injured while playing in the city streets during the year 1912. In the states of New York and New Jersey during the same year there were 164 children under sixteen years of age killed on account of being struck or run over by automobiles and 935 injured from the same cause. There were 77 killed and 171 injured by being struck or run over by trolley cars, 110 killed and 249 injured by being struck or run over by wagons; a total of 351 children under sixteen years of age killed and 1,355 injured in one year in only two states of the Union on account of being struck or run over by some vehicle while playing upon or crossing public streets or highways. The mortality tables of the United States census reports show 346 children under fourteen years of age killed by street cars in the year 1908 and 353 killed in 1910. These reports also show 469 children under fourteen years killed in 1908 by wagons and 471 in 1910. There were 110 under the same age killed by automobiles in 1908 and 273 killed in 1910 by the same cause. It is also interesting to know that more than 75% of these fatal accidents were to boys, the proportion of girls thus killed being under 25%. Complete figures of the number seriously but not fatally injured from these causes are not at hand but, within a given period, the number of persons injured, in the aggregate, due to any stated cause, is usually in excess of the number killed. However, we are confronted with the appalling fact that there were, in the United States, 925 little ones under fourteen years of age killed by moving street vehicles in the year 1908 and 1,097 killed in the same manner in 1910, and an untold number injured and crippled. We are also confronted with the fact that every year there are 1,300 little ones under fourteen years of age and more than 3,000 persons under twenty-one years of age killed and injured while tres-

passing on railroads in this country, to say nothing of uncounted thousands who meet death or serious injury from many other causes.

These figures have been cited to show the need of education for the prevention of accidents. What a sad commentary on the wisdom and humane progressiveness of our nation that these children should be permitted to go unchecked to their deaths by the hundreds each year. It is the very fact that so many of these victims were of tender years, inexperienced, with immature minds, without full knowledge of the dangers that beset them in a peaceful, civilized community, and without the teaching and training which would have kept them in paths of safety, which makes it the saddest of records to contemplate.

Suppose a hundred children should lose their lives in some great holocaust, such as a fire panic in one of our schools. The whole country would be shocked. Rigid investigations would take place. Laws would be passed. Stricter fire drills inaugurated and every effort made to prevent a recurrence of the calamity. But what a difference it seems to make whether a number of lives are ended in some great calamity or whether several thousand young lives are snuffed out annually in an incessant recurrence, hour after hour of obscure little tragedies to which we give little or no thought beyond the reading of a brief chronicle of the event in the daily paper. Is there a more noble, humane or progressive work that can be undertaken by the educators in the public schools of this country than that of educating the child from the beginning to be careful, to act safely and prevent such needless, unnecessary and deplorable loss of life, as well as prevent the making of hundreds of helpless cripples? It seems to me it is a most important branch of child welfare to keep the child whole with both its arms and legs. It is important to the nation to save the economic loss involved in the sacrifice of the lives of its future citizens and to reduce the number of helpless cripples.

There is a further and more far reaching effect to be obtained from inculcating the doctrine of safety in the mind of the child. During the year ending June 30, 1912, the Interstate Commerce Commission's reports showed there were 5,285 railroad trespassers killed and 5,687 injured. The majority of those who were not children were wage earners—parents of children attending public schools. In addition to those killed on railroads the lives of thousands of adults are yearly lost through other accidents that are the result of carelessness or lack of prudence and forethought. Is not the welfare of the child materially affected by this wholesale and deplorable slaughter of those upon whom it depends for its support and education? And if the seed, sown in the mind of the child in school, will take root, grow and be carried through the child into the home, thereby impressing the fathers and brothers with

the need for greater care and caution, will it not have a beneficial effect on the child itself if the accidents to the bread winning members of families are, in that manner, even to a small degree, diminished. But the greatest good, perhaps, is that which will result in future years, from the seed that is sown to-day, when the children of to-day shall become the bread winners and parents of the school children of tomorrow, in the reduction of accidents to those future adults, because of their early education which taught them the priceless habit of being careful.

The State of Ohio has already passed a law providing for instruction in accident prevention in the public schools of that state. A similar law has been passed in New Jersey, and every state in the Union ought to enact the same kind of law. Absence of such a law, however, should not prevent local boards of education and teachers from introducing the subject into the schools. Work of this character has already been introduced with success in the public schools of Brooklyn, N. Y., and talks on safety issued by the Wisconsin Safety League have been given in the schools of that state.

Stop, Look, Listen and Think are words of caution that should be burned into the minds of the children with respect to teaching them the dangers that beset them while crossing streets, railroad or car tracks. An emphatic "Don't" or "Never" are the only words of wisdom to be impressed upon them with respect to walking or playing upon railroad tracks, loitering about stations or cars, flipping on and off cars, engines or trains, crawling under, between or over cars, or under crossing gates when they are down, playing with matches, bonfires and indulging in other hazardous pastimes.

As I am not a school teacher or professor, I would not wish to attempt to outline the best method of teaching accident prevention to the children but it is my idea that an effective way to teach the younger children is by reading to them stories of child interest that dwell particularly upon certain dangers that are common. Each story should outline in such simple language as will appeal to and interest children in the unhappy consequences which befell some child who was run over by a street car, struck by an automobile, burned with fire or had his or her limb crushed by a railroad car while trespassing on the tracks—each story with a moral—something which will leave a lasting impression in the mind of the child. The stories, when read, should be supplemented by appropriate remarks from the teacher to further impress upon the child the necessity of care, thoughtfulness and prudence in crossing or playing upon the street, playing with fires or matches, or the great danger of walking or playing on railroad tracks, teaching them that not only is it dangerous but wrong to do so. Stories of the character

referred to are published by the American Museum of Safety in New York City and have been used in the Brooklyn schools.

The effect of this work in the schools can be further enhanced by the organization of "Safety" leagues, by the awarding of prizes for the best compositions on safety and accident prevention and by the setting aside of a certain day during the term for a "Safety" day on which day there should be exercises appropriate for the occasion having an educational and inspiring effect. But I will not attempt further to tell trained educators how to conduct this work of education which their experience and training will enable them to readily plan and put into effect. It is my desire merely to point out the great crying need of such work and urge the adoption of a system of careful and thorough training of our school children in safety.

If further illustration of the great need of education in accident prevention is required than the figures I have quoted, of the lives sacrificed through ignorance and neglect, then take the time some day to go to one of the railroad yards in a community where there are many school children and watch them; from the reckless, daredevil boy of ten to fourteen to the little tots of six years and under, playing about the tracks and turntables, hopping on and off cars, running across or walking upon tracks where cars are shunted back and forth or where trains move swiftly and with great frequency, oblivious to all danger, and yet only doing what they have been taught by the example of their elders, who thoughtlessly use the railroads as public thoroughfares, that it is not wrong to do, and adding hourly to the sacrifice of life and limb that is a shame and disgrace to this progressive and humane country. Think of it—fourteen trespassers needlessly killed and injured on our railroads every day. Hundreds of others killed and injured in a score of other ways every day because of the happy-go-lucky, reckless, thoughtless and careless spirit, which is bred from childhood, allowed to become a habit and to go unchecked with no concerted effort on the part of our educators to curb it. Is it not time, that as a nation, we awoke to the seriousness of this problem and exerted our utmost to prevent the recurrence year after year of a merciless and unnecessary slaughter? Is it possible that we can go on in our schools spending time, money and brains for the improvement of the health of school children and overlook the fearful ravages of preventable accidents that affect not only the present welfare of those children so unfortunate as to meet with them, but also has a far reaching effect into future generations? It does not seem that we can overlook this important feature of child welfare if careful consideration is given to this widespread evil that exists to-day and is increasing year after year.

In the early days of the American colonies men, women and children

alike learned to be watchful and alert, on the lookout for dangers that they knew instinctively they must guard against, such as Indians, wild animals and the like. Caution became a habit with those hardy pioneers. They never thought of leaving their abodes without carrying firearms and they built stockades or barriers about their homes to protect themselves from harm. We are not confronted with the same dangers our forefathers were in those early times, but there lurks in every city street, in every highway and byway, on our railroads, on our farms and in our villages countless dangers, one of which will surely, sooner or later, overcome the careless, thoughtless child or adult. Let us begin in the schools and, by teaching safety to the children, build about them a stockade or barrier of carefulness that will protect them from the dangers of civilization. Let us instill into the childish mind a spirit of carefulness and prudence which will not only save hundreds of lives and prevent thousands from becoming crippled and maimed, but also make better, more efficient and valuable citizens of them in future years. If we do this, through the medium of the greatest of all national institutions and most effective of our national influences, the public schools, it will be an accomplishment which will be one of the greatest monuments to our humanity and progressiveness that was ever erected.

THE SCHOOL CHILD AS A CARRIER OF WHOOPIING COUGH

BY

L. W. GORHAM

Whooping cough is a peculiar disease of the breathing area characterized by severe paroxysms of coughing. Young children are especially susceptible to it. The paroxysms coming at two or three hour intervals in the early part of the infection, often appear at half hour intervals of both day and night, when the height of the disease is reached. At such times, the child presents a distressing picture. The attack starts with a series of short coughs which diminish in their intensity, until the child has expelled all the air it can from its lungs. Then follows the long crowing gasp for air, which produces the familiar whoop. During the paroxysms the face becomes swollen and red, the eyes are suffused, the tongue protrudes, and there is a general outpouring of tears, nasal discharge, saliva, and bronchial secretion. The stomach usually loses its balance amid this tumult and vomiting ends the paroxysm. This may be all for at least an hour or more, but in severe cases, one paroxysm is succeeded by another.

It is not so much to the suffering resulting directly from these attacks that I wish to call your attention, but rather to their serious and all too frequent complication of broncho-pneumonia, which spells death in so many cases. There is also a complication of whooping cough which, though not fatal, succeeds in incapacitating its victims for life. I refer to the insidious dilations of the bronchi, known as bronchiectasis.

The cause of pertussis, which is another name for whooping cough, is now known. The lesion which this known agent produces has also been discovered, but of these points I shall speak later on in detail.

We are beginning to see the dawning of a new era in medicine. The discoveries of Pasteur, Virchow, and Lister laid bare a new world in research, and, digging in the trails which these masters blazed, workers have been patiently and diligently collecting facts. One disease after another has yielded its secret of cause and mode of transmission, until the present finds us qualified to successfully limit the spread and to combat the progress of many a serious infection. For empiricism we may now substitute a treatment founded on fact. Our efforts may be directed against the cause, rather than against its results. Praiseworthy as ministering unto the ills of the individual may be, our more comprehensive and exact knowledge calls for a higher ideal than this. An

ideal which aims at the prevention of disease, and the saving of life, not for the individual but for the community. This is the hope of Preventive Medicine, and this, the new light which we are beginning to see.

So rapid has been the acquisition of information regarding different infections, and so great is the variety of these contributions, that the application of our new found knowledge has not always been as immediate as one might wish. It requires a certain period of time for advance in science to filter out from the laboratory to the physician and to the general public. The mere report of an important discovery does not bring knowledge regarding it into practical daily use. For example, the announcement that typhoid fever is caused by a definite micro-organism, and not by a divine visitation, and that typhoid bacilli often live in contaminated water and milk, did not lead at once to a clean water and milk supply; and has not yet in some communities, 30 years afterward.

When there have been so many pressing problems in Preventive Medicine, connected with typhoid fever, tuberculosis, and diphtheria, it is not to be wondered at that little attention has been directed to whooping cough. A considerable amount of laboratory investigation however has centered in it during the past few years, with the result that new light has been shed on this infection. I shall endeavor to prove to you that whooping cough is a disease, serious enough to warrant attention as an important problem in school hygiene, and I shall further point out to you its principal features as revealed by a study of statistics and by laboratory work.

Physicians as well as laymen generally regard whooping cough as a more or less harmless infection. The justification for this view seems to be the argument that almost every child has whooping cough at some time in its life, and that recovery is the usual outcome. Yet any disease which kills 10,000 children yearly in the United States is a serious one. Rucker says sensationally but truly: "If bubonic plague were to kill that many children in the United States in one year, the whole world would quarantine against our country. A child dead of whooping cough is just as dead, as a child dead of plague."

An appeal to physicians urging them to a sense of the gravity of whooping cough was made by Dr. John Lovett Morse of Boston, in a paper read at the annual meeting of the Society for the Study of the Diseases of Children. (Amer. Pediatrics Soc., Washington, May, 1913.) With considerable effort, Dr. Morse has collected recent statistics, by writing to the Boards of Health of nearly every state in this country. I have drawn largely upon his paper for the figures which I shall present to you.

The U. S. Census Bureau gives a report for 1906 of the mortality from whooping cough. The figures were collected from a registration area comprising somewhat less than one-half of the country. In this area there were 6,324 deaths in children under 5 years of age. This would make an estimated total of at least 10,000 deaths annually in the United States. But significant as these figures are, a clearer conception of the serious nature of whooping cough is to be gained by comparing its death rate with some of the generally feared infections of childhood. For example, how does whooping cough measure up to scarlet fever and diphtheria? The U. S. Public Health Reports for 1910 will inform us on this point. The death rate per 100,000 for whooping cough, scarlet fever, measles and diphtheria in this year were as follows:

Whooping cough.....	11.4%
Scarlet fever.....	11.6%
Measles.....	12.3%
Diphtheria.....	21.4%

Morse's figures obtained from 30 different states in 1911 are in perfect accord with the above. He found in this area:

Whooping cough responsible for.....	6,251 deaths
Scarlet fever responsible for.....	4,232 deaths
Diphtheria responsible for.....	9,579 deaths

Undoubtedly there are a large number of deaths in children due to broncho-pneumonia, following whooping cough. These fatalities, if added to the whooping cough score, would still further increase the mortality figures of this disease. But we have enough to convince even the most sceptical that whooping cough is just as serious an infection as scarlet fever, and fully half as serious as diphtheria. To be sure 96% of the 6,324 deaths from whooping cough in the United States in 1906 were in children under 5 years of age. The distribution is shown in detail as follows:

In the 1st year the mortality was.....	57%
In the 2nd year the mortality was.....	23%
In the 3rd year the mortality was.....	8%
In the 4th year the mortality was.....	4%
In the 5th year the mortality was.....	2.5%

The disease is therefore most fatal in the very young.

What is being done in this country to reduce the whooping cough death rate? What are the rules (1) regarding notification, by this I

mean the report of all cases to the Board of Health; (2) regarding quarantine, by this I mean the keeping of the patient by himself within his own infection area, where he will not be a menace to others; (3) regarding disinfection, by disinfection I mean the destruction of all infectious material coming from the patient; and (4) regarding school attendance, *i. e.*, how long shall the child be kept out of school and shall the other children in the same house be allowed to go to school, whether they have had the disease or not?

Whooping cough is a notifiable disease in 29 out of 43 states. In many of these there is doubtless difficulty found in the making of accurate reports. Isolation is required by law in 7 states, modified isolation is prescribed in two others, and isolation is recommended in a third. 31 states have made no provision in this regard.

Disinfection is part of the law requirement in 4 states. It is recommended in one. 34 states are without statute on this point.

Two states at least have no law forbidding children who have whooping cough to attend school. Only 3 states specify how long they are to be kept at home, before returning to their studies. In 7 states the other children in the family are not permitted to attend school, when there is a case of whooping cough in their home. In 11 states the other children may continue going to school, no matter whether they have previously had the disease or not. In 6 states they are allowed to continue if they have had whooping cough, and in 2 states if the patient is isolated. 9 states fail to make any provision whatever in this regard.

The arrangements for the hospital treatment of whooping cough are most inadequate. The majority of the general hospitals throughout the country refuse to take whooping cough cases, or admit only a few with severe complications and then treat them in separate rooms of an isolation ward.

The management of whooping cough cases in our dispensaries follows no general rule. In most instances the children at their first visit mingle freely with the other children, while waiting their turn to be examined. In a few out-patient clinics these cases are picked out by a physician before the children go to the waiting room. In the majority of clinics these whooping cough children are not allowed to return for treatment, but are referred to district or dispensary physicians. In some hospitals they are seen before or after dispensary hours, or at a special time of day.

The United States does not stand alone in the inadequacy of its care for whooping cough. Conditions are about the same in most European countries.

Need I go further to convince you that whooping cough is not a trivial infection, and that there is a woeful lack of effort to control the disease?

I should like to tell you now, some of the facts about the cause of whooping cough.

Whooping cough is caused by a minute ovoid bacillus which is found constantly in the sputum of children in the early stage of disease. It is about the size of the influenza bacillus and when magnified 1,000 times you could lay two of them on the head of an ordinary pin. Bordet and Gengou, two illustrious scientists, working in Belgium, first observed the bacillus in the sputum of a child in 1900. Later, in 1906, after repeated failures they were able to make the organism grow in pure culture in a glass test tube—a great accomplishment as the bacillus dies quickly on removal from the human body, and is loath to grow on artificial media. This fact leads us to an important conclusion. The disease must be spread by direct contagion, *i. e.*, by the transfer of the bacilli from one child to another. The bacilli are undoubtedly present in the fine droplet spray which issues from the mouth and nose during cough. But the fact that the organism dies readily emphasizes that danger of further dissemination of the disease can be prevented if the child is kept in strict quarantine. Bacteriologists had generally accepted this bacillus called Bordet-Gengou, after its discoverers, as the cause of whooping cough, because of its constant presence in the early stage of the disease and because of a specific serum reaction which has been obtained. The final and convincing proof, however, that this minute rod is the cause of every case of whooping cough, was demonstrated recently by Dr. Mallory of Harvard. By exceptionally keen observation, accompanied by special care in the technique of cutting and staining tissue, he found a tiny bacillus in the trachea of a child dead of whooping cough, identical in appearance to that described by Bordet and Gengou. A discovery very simple in itself, it is true, but a fact that has been overlooked nevertheless for many years.

It has been my privilege to work in Dr. Mallory's laboratory during the past year. I should now like to show you, with the lantern, some of the preparations made there.

Slide No. 2 shows the cells lining the trachea (windpipe) of a child who died after two weeks of whooping cough. The hair-like processes on these cells (cilia) normally assist in the removal of mucus secretion by gently waving in an upward direction. Here they are seen to be

Slide 1. Shows a pure culture of the Bordet-Gengou bacillus which I isolated from the sputum of a child, who had been ill for one week with whooping cough.

Slide 2. (See text.)

Slide 3. Represents a higher magnification of the preceding.

Slide 4. Shows the lesion after the disease has progressed for six weeks. It is noted that the organisms are greatly decreased in number.

matted together with clusters of small bacilli. Their normal action is impeded. What is the result? 200 square feet of mucous area continues to pour out its secretion. Instead of being carried up to the mouth and unconsciously swallowed as occurs in the normal individual, all this material stagnates. Nature's effort to rid herself of this collection results in a severe paroxysmal cough. The persistence and severity of the cough is now clear to you. It depends on the presence and growth of these minute vacilli in the depths of the cilia.

Such is briefly our knowledge of whooping cough. We then ask how close is the relation of this disease to the school child? The fact that 95% of the deaths occur in children who are not old enough to attend school, should not mislead us. Mortality figures give us no idea of the real incidence. Each case must be regarded as a source of danger and possible infection. Older children may themselves suffer very little from this disease, but yet serve to communicate it to younger members of the same household. It is not beyond the limit of imagination to conceive of some individuals harboring the germ without showing symptoms themselves. In other words, there may be whooping cough carriers.

Certainly the time is now ripe for a campaign of education regarding whooping cough.

An interesting example of the practical application of scientific knowledge of disease is shown in the animal kingdom. There is a disease which occurs in puppies known as distemper which resembles whooping cough. It is caused by a bacterium which looks much like the Bordet-Gengou bacillus, and the lesion produced is identical with that of whooping cough. Distemper was proving such a handicap to the raising of thoroughbred dogs that men interested in this business were found ready a few years ago to financially assist a bacteriological study of the disease. This work has been reported. We have learned the cause, the lesion produced, and have proof that the disease can be controlled by a distemper vaccine. The laboratory study of whooping cough has progressed as far as that of distemper. The argument by analogy is strong. The attempt to cut down the death rate from whooping cough ought to interest us as much as the rearing of a greater number of healthy puppies.

Very little can be accomplished, however, until public health officer, physician, and layman realize that whooping cough is an infection of grave importance—an infection which plays a rôle equal to that of scarlet fever as a cause of death in children. With the realization of this fact we shall have a careful report of all cases to the Board of Health, stricter rules as to quarantine and school attendance. Hospital care

will then be made available for those who cannot be properly cared for at home.

As educators and hygienists you are peculiarly placed to spread the knowledge of the facts which I have summarized, and to aid in their practical application. You have a rare opportunity to join hands with health authorities and physicians in the moulding of public opinion regarding this underestimated but serious disease of whooping cough.

SESSION TWENTY-SIX

Room C.

Friday, August 29th, 9:00 A.M.

THE EXCITING AND CONTRIBUTORY CAUSES OF DISEASE AND PHYSICAL DEFECTS IN SCHOOL CHILDREN (Part Three)

JOEL E. GOLDTHWAIT, M.D., *Chairman*

DR. B. BARTOW, Buffalo, N. Y., *Vice-Chairman*

Program of Session Twenty-six

JESSIE H. BANCROFT, Assistant Director Physical Training, Board of Education, New York City. "School Efficiency in Relation to the Posture of Pupils."

LUCIEN HOWE, M.D., Sc. D., Professor Emeritus of Ophthalmology, University of Buffalo, Buffalo, N. Y. "The Prevention of Near-Sightedness in Children by Means of Shoulderbraces and by Knapsacks for School Books."

A. EMIL SCHMITT, M.D., Medical Adviser, Ethical Culture School, New York City. "New Regulations for the Control of Infectious Diseases in Some of the Private Schools of New York City."

DR. JOQUIN C. COSIO, Mexico City. "Transmissible Diseases in the Official Schools in the City of Mexico." (Manuscript not included.)

ELLEN ALFLEDA WALLACE, M.D., Manchester, N. H. "Prevention of Colds in Public Schools."

THERON C. STEARNS, M.D., Jersey City, N. J. "Efficiency in Life Activities." (Manuscript not included.)

Papers Presented in Absentia in Sessions Twenty-five and Twenty-six
(Read by Title)

CHARLES F. ROSSIGNOL, M.D., President National Bureau, Fédérations d'Instituteurs, Brussels, Belgium. "Les Instituteurs et la Tuberculose."

DR. RICHARDO E. CICERO, Mexico City. "The Treatment of Tineas, Warts, and Scabies at the 'Doctor Balmis' School." (Manuscript not included.)

DR. J. GONZALEZ URUEÑA, Mexico City. "Dermatologia Escolar." (Manuscript not included.)

JAMES WARREN SEVER, M.D., Junior Assistant Surgeon Children's Hospital; Surgeon House of the Good Samaritan, Boston, Mass. "The Occurrence of Spinal Curvature Among School Children."

JAMES WARREN SEVER, M.D., Junior Assistant Surgeon Children's Hospital; Surgeon House of the Good Samaritan, Boston, Mass. "School Desks and Chairs and Their Relation to the Occurrence of Scoliosis in School Children, With Especial Consideration of the Furniture Used in the Schools of the United States."

NATHALIE KAVALEFF MANKELL, M.D., Buffalo, N. Y. "Two Important Points in Correction of Exaggerated Antero-Posterior Curves of the Spine and of Acquired Genu Valgus Used in the Physical Training of Children."

SCHOOL EFFICIENCY IN RELATION TO THE POSTURE OF PUPILS

BY

JESSIE H. BANCROFT

This study assumes an appreciation of the importance of correct posture as a factor in the functioning of the thoracic, abdominal and pelvic viscera, and of its especial significance for growth and development during childhood. By way of preface it is only necessary to point out that the educational aspects of the subject are not generally appreciated. A child does not learn to stand erect for life when he learns to stand and walk alone. *He is learning to hold the erect position throughout all his years of bodily growth*, and no feature of his development is more truly a matter for education. Probably 80% of so-called normal children have antero-posterior faults of posture that call for active corrective measures, and in from 25% to 50% are found the pathological asymmetries of scoliosis.

Realizing, then, that this unstable, variable, immature power needs our help and guidance in all children throughout the period of growth, it behooves us as educators to ask to what influences for posture we forcibly subject a child by our compulsory education laws. A brief inventory of these influences on an efficiency basis is the task of this paper. The course of study analyzed for this purpose is that used in the sixth and seventh years of the public elementary schools of New York City, which may be considered as fairly typical for the country. The type of organization is the so-called departmental system in which pupils change class rooms for recitation four times a day. The school sessions cover five hours per day; for some purposes there is added to this the time spent out of school in school occupations; that is in these grades, home study one hour per day, and the carrying of books to and from home thirty minutes per day. In this analysis I have had the assistance of a school principal, and while the figures can only be approximate, they probably understate, rather than overstate the truth.

Of the three fundamental positions of the body—standing, sitting and lying down—school occupations naturally call only for the two erect positions—standing and sitting. Including the noon recess, this means six hours of unrelieved strain for the erect positions. In itself this is a very potent cause of school fatigue and enough to induce poor posture. Left to himself, out of school, a child many times a day relieves the strain of erect posture by resting on the gate, or fence, or railing, leaning

over the back of a chair, or even throwing himself at full length on the grass or rug. We have learned that for anemic, tubercular and crippled children provision must be made in school for rest in the horizontal position. Normal children of the age considered may not need to lie down, but certainly such a long muscular strain for erect carriage should be relieved by much activity and change of position, and especially should provision be made for a reclined sitting position which would support the body in practically an erect attitude, but relieve the pull of gravitation. So far as I know, there is not in use a single school seat that gives reclined sitting support in correct posture. Therefore, the only relief to the erect position comes through the active or standing occupations, the partial change of position from sitting to standing, and lounging positions.

TABLE I
WEEKLY TIME DISTRIBUTION BETWEEN VARIOUS TYPICAL STANDING AND SITTING POSITIONS AND OCCUPATIONS

Course of study sixth and seventh years, public elementary schools, New York City; departmental system, pupils changing class-rooms four times per day.

SUBJECT	STANDING			SITTING			Total amount of time per week
	Active (standing occupations)	Static (standing as for recitation and assemblies)	Walking (carrying books)	Erect	Inclined forward (as in writing and close book work)	Reclined backward (listening to instructions, waiting turn to recite, etc.)	
Opening exercises...		15 min.		10 min.		50 min.	75 min.
Physical training:							
Formal periods...	75 min.						
2 min. drill...	30 min.	(taken from unassigned time)					105 min.
Physiology and hygiene						15 min.	
English: (time deducted for changing class rooms)							
Reading...		5 min.				75 min.	
Grammar...		2 min.			50 min.	48 min.	
Composition...		2 min.			50 min.	48 min.	
Spelling...		1 min.			20 min.	29 min.	345 min.
Penmanship...					75 min.		75 min.
Geography...		3 min.			40 min.	77 min.	120 min.
History...		3 min.			40 min.	77 min.	120 min.
Mathematics...		22 min.			140 min.	38 min.	200 min.
Science...		2 min.			40 min.	38 min.	80 min.
*Drawing and constructive work...					60 min.	20 min.	80 min.
Shop work and cooking	80 min.						
Music...		5 min.		40 min.		15 min.	80 min.
Study and unassigned time...		5 min.					60 min.
Changing classrooms.			50 min.		80 min.	25 min.	110 min.
Total time in school...	185 min.	65 min.	50 min.	50 min.	595 min.	555 min.	1500 min.
Out of school:							
Home study...					300 min.	50 min.	
Carrying books...			150 min.				
Total time devoted to school occupations...	185 min.	65 min.	200 min.	50 min.	895 min.	605 min.	1500 min.

* Since the above analysis was made, a new course of study in drawing has been adopted for the New York City schools which gives especial attention to the upright posture, and changes largely the usual emphasis on poor posture in this occupation.

Of the fourteen subjects in the school curriculum, only two, physical and manual training (shop work for boys and domestic science for girls) are active, or standing, occupations. They fill 62% of the standing time, or 12% of the school time.

The change from sitting to standing may afford some partial relief, but here again the proportions fail us. A child in these grades spends 20% of his time in standing, and 80% in sitting—one hour of standing to four of sitting. One great feature of our present ignorance and inefficiency is that we do not know, from the viewpoint of the great organic functions of the body, what should be the normal limits for sitting, for children of different ages or for adults; but we do know that this school proportion is abnormal. Moreover, do we avail ourselves as we might of possible change of position? In factories, under scientific management, if a workman's task calls for close concentration with very limited physical activity, he is allowed to interrupt his work to go to other parts of the building to get his own materials, and to deliver his finished product. The relief from the strain and fatigue of his task shows both an increased amount and better quality in his output. If, on the other hand, his task calls for considerable activity, time is saved by having his materials taken to him and the finished product collected from him. In how many of our class-rooms are the children accorded analogous relief by passing up to the teacher's desk or the cupboard to get their own composition papers, or pencils, or drawing materials? Or, again, to deliver their finished product? Or to what extent do we follow tradition and keep nearly the entire class imprisoned in their seats while one or two monitors benefit from the exercise?

Let us analyze the positions called for in the sitting and standing occupations in school, to determine which favor good posture, and which are harmful. The 20% of time devoted to standing is given practically to three types of standing: *First*. The active occupations previously considered fill 62% of the standing time. Of these the physical training may be counted as making for good posture. Manual training requires so much stooping and bending that in spite of its active character it must be considered as tending toward poor posture. *Second*. The static standing, as for recitation, or in assemblies. In this I estimate the child spends 21% of his standing time or 4% of his total school time. Because it is a partial change of position, and for brief periods only, this static standing in school might be beneficial to posture, though as a matter of fact we know the positions assumed during recitation are among the worst seen in the school day. These positions in recitation may be considered, however, as indicating the need for better methods of rousing the child's interest and energy in his posture and may not be counted as a requirement of the school. To be liberal,

however, this static standing may be considered as tending toward good posture. There remains the walking, mostly consumed in changing class-rooms. The postural benefit of this might be considerable, but is wholly vitiated through the carrying of books, one of the most distorting and harmful of all school influences. I estimate that in carrying books in and out of school a child spends 10% of the time devoted to the school occupations. He carries books more minutes per day than are given to corrective exercise to counteract the effects.

This subject of book carrying is so important that it is well to pause a moment to consider it. The carrying of all the books at once, the most harmful phase of book carrying, is due, in the type of city school studied, to fear of pilfering by succeeding classes that use the room for recitation or for night school. This could be obviated by providing locker space for each child. One New York high school has such lockers in the form of a bank of drawers built in under the blackboards in each room. As to carrying books for home study, there is only one way to solve that problem, and that is to abolish home study altogether. There is a subject for a School Hygiene Congress! One wonders even why the Child Labor Committees have not taken up this subject of home study. I submit that five hours of intensive work per day is enough for a growing child. The teacher, lawyer or any other worker who adds night work to the allotted day's labor is courting physical breakdown. One has only to know how much sleeplessness there is among children, and how closely this is related to work done late in the day, to appreciate that home study is a potent element in fatigue and reduced vitality that shows in poor posture and many other effects. The conditions for home study in the average home are in other ways probably much worse for posture than anything that obtains in school. I know all the pedagogical arguments in favor of home study; but, I submit, if these influences are so valuable that they should be retained, the time should be taken from the school session and not added to it.

Turn next to the sitting occupations which fill 80% of the pupil's time in school. They fall into three fundamental sitting positions: (1) the perfectly erect position, which is taken in singing and when called momentarily to attention. In such short periods this position may be considered very good for posture. In it the child spends 4% of his sitting time in school; (2) the leaning forward position, as in writing or close book work, which calls for 50% of the sitting time in school; this is wholly bad in its influence for posture; (3) a reclined sitting position, in which a child might spend 46% of his sitting time in school, while awaiting his turn to recite, listening to instructions from the teacher, etc. This time might be wholly beneficial to posture, but as previously stated, there is not, to my knowledge, a school seat in use

or on the market that makes this position possible in good posture, and therefore this time leads to his worst lounging attitudes.

It need not be said that in all sitting positions the adjustment of school furniture for height is one of the most potent influences for posture, but in most cases, even the adjustable furniture is not adjusted. This is because the nut-and-monkey-wrench type of adjustable device in general use is one of the most inefficient elements in this whole problem. In a large school building in New York City I am told it took four expert workmen eight hours a day for two weeks to adjust all of the furniture according to specifications. At each half yearly promotion it is moderate to estimate that one-third of the seats will need readjustment. There is usually only one janitor available to do this. If it takes four men eight hours a day for two weeks to adjust all of the furniture, how long will it take one man working three hours a day to adjust one third of it? A child has to have reached about the seventh grade, I believe, to be able to figure out his school's efficiency on this subject. I estimate that the school term will be nearly half over before the furniture will be adjusted. When one considers that all furniture should be so easy to adjust that within an hour after a class is promoted every seat and desk in the room should fit its occupant, it is apparent that on this point school efficiency is almost nil.

There are many other things that affect posture, including prominently the lighting of the school room and medical defects as of sight or hearing. Poor nutrition is a potent factor, and school lunches are as important for posture as for any other expression of vitality. Fatigue has one of its most sensitive indications in the carriage of the body, and all causes that contribute to fatigue are of immediate concern in this connection. Here a word needs to be said about recesses. It is becoming quite general to eliminate recess periods in grammar grades, and I know of none in higher institutions. In factories where scientific management obtains, it is found that the employer gains in both quantity and quality of output by having recess periods. Our schools should be at least as scientific and as humane as our factories.

To sum up, then, I estimate that 85% of the time spent in school calls necessarily for positions, the influence of which is toward poor posture, that even the balance of 15% is vitiated in its possible influence by poor furniture, poor light, fatigue, medical defects, etc., and that only 11% of the time (physical training and singing) makes actively for good posture.

Now let us look this whole situation squarely in the face. Surely a normal, healthy child should be able to spend some time without detriment in the forward bending occupations and in lounging attitudes.

TABLE II
PERCENTAGE OF TIME PASSED IN VARIOUS POSITIONS AND OCCUPATIONS THAT
AFFECT POSTURE

	Minutes per week in school	% of standing time in school	% of sitting time in school	% of total time in school	% of total time given to school occupations in and out of school
STANDING:					
Active occupations.....	185	.62		.12	
Static standing.....	65	.21		.04	
Walking.....	50	.17		.03	
Total.....	300			.20	
SITTING:					
Erect.....	50		.04	.03	
Leaning forward.....	595		.50	.60	
Reclined backward.....	555		.46	.37	
Total.....	1200			.80	
CARRYING BOOKS:					
In school.....	50	.17		.05	
Out of school.....	150				
Total.....	200				.10

INFLUENCES THAT FAVOR GOOD POSTURE

STANDING IN SCHOOL:					
Active occupation:					
Physical training.....	105				
Static standing.....	65				
	170	.57		.11	.08
Sitting time in school:					
Erect position.....	50		.04	.03	.02 +
Total influences for good posture..	220			.15	.11

INFLUENCES THAT CULTIVATE BAD POSTURES

IN SCHOOL:					
Manual training.....	80				
Carrying books.....	50				
Leaning forward }					
Sitting positions }	595				
Reclined sitting positions.....	555				
Total in school.....	1280			.85	
OUT OF SCHOOL:					
Home study.....	350				
Carrying books.....	150				
	1780				.89

The harm comes when these positions are maintained too large a proportion of the time, or become habitual. Any figures on this point must be purely speculative, as there is no scientific data to draw from. To be very liberal, let us say that *with proper corrective measures afterward*, a child might relax into lounging positions one minute out of every ten, or 50 minutes a day. Let us say that in these advanced

grades he might spend 15 minutes out of every hour in the forward positions for writing or close book work. This would mean that he might, without harm, spend at the very utmost 35% of the time in school in these positions that, in themselves, are essentially bad. At present we require him, sitting and standing, to hold deleterious positions 85% of the time in school or 89% of the time devoted to school occupations. This is 50%, or 63% more time than a most liberal estimate would allow; yet we adults, supposed to be sane, responsible people, boast of our compulsory education laws which compel these little children to these influences from 35% to 50% of their waking time 200 days in the year.

Up to this point, this review of school conditions affecting posture may be chiefly characterized as a summary of school inefficiency. It now remains to consider what positive influences the physical training is bringing to bear to aid or correct this feature of the child's development. Our best schools of to-day include formal, corrective gymnastics in their curricula. Do these gymnastics correct? How many pupils acquire through them the power to assume, and endurance to hold, a correct standing position? Undoubtedly the general average of achievement on this point is also very low; but here, fortunately, there are some new constructive measures to offer that have demonstrated their power to lift school efficiency on this phase of neuromuscular training to a far higher level. This audience is presumably familiar with the principles of the new school of scientific management, or efficiency engineering that has achieved truly remarkable results in the industrial world. This work consists of a philosophy that includes strong psychological elements, as well as an organized body of distinct methods of administration. Efforts to apply these principles to educational work are being made in many directions, and I share with many others the belief that these efficiency methods may work as great a revolution in education as they have done where fully and fairly tried in the industrial world. My faith in this is based on the result of applying some of these methods to the development of the posture of pupils of the public elementary schools of Brooklyn, N. Y. There we have worked out their application in over 5,000 classes, with 200,000 children, raising the entire standard of teaching on this subject, motivating and vitalizing the work so that it has produced far higher results than we have previously been able to achieve.

The fundamental principle in this particular adaptation of the efficiency methods is the standardization of the subject. What is a reasonable standard to expect a school to produce in this phase of a child's development? Surely every child should be able to stand correctly. Further, he should be able to show endurance in holding the position as he walks or marches around the school, and third, he should

be able to maintain the position during corrective exercises which will benefit his carriage only on condition that there is a good basic position from which to take them. We therefore combine these requirements in a triple test and judge of the child's position in standing, marching and exercise. This is the standardization of the subject for the child. Each class is put through a systematic test of this kind once a month, and is segregated in two groups, those pupils who pass the test standing thereafter for each lesson in physical training in a group by themselves, and those who do not pass in another group; the latter may then have special attention from the teacher, though both groups take their physical training lesson at the same time. On the basis of this grouping is figured the class percentage on the subject, and in this lies largely the crux of the wonderful psychological power of these methods. For instance, if out of a class of forty pupils only ten pass the triple test (a liberal percentage when the methods are first tried), only twenty-five per cent. of the pupils have a satisfactory development in posture. No class, no teacher, and no principal is going to rest on a twenty-five per cent. achievement in this or any other subject; and the interest and zeal with which all concerned go to work to improve these figures, I have never seen equaled for any object except athletic trophies. It motivates the work for the pupils. It gives the teacher a standard of measurement by which she may judge of the success of her teaching in this subject. It does more—it draws her attention to the individual child and his needs in a far more intimate way than the conditions of public school work usually allow; and, moreover, it is the actual power and condition of the child that lead to the estimate and not some vague generalization or artificial standard. It is, in very truth, a scientific accounting of facts, as distinguished from the general judgment that is so loosely and generally passed on the child's achievement in both his physical and mental education. If you want to appreciate the psychological force of such methods, just take an inventory of the posture of your class, or school or college, on the basis of this triple test. I should be surprised if the institutions were not very few that were not thereby convicted of most astounding inefficiency on this subject.

The use of individual, class and school records so that they stimulate interest by the growth of figures from month to month; the use of grouping, with its very palpable appeal to ambition; the employment of the principle of frequent reward through monthly promotion, so that effort is not kept too long on a strain—these and other features constitute a systematic, organized body of procedure that is much greater than any one of its elements, and that would be crippled in its effects without any one. The results, stated in figures, are illuminating. The first term that these methods were generally used they were put only in one

thousand classes of the seventh and eighth years. In February only 40% of the 32,967 children could pass even the first third of this triple test—the standing test; in the following June 85% could pass the triple test for standing, marching and exercise. When applied to 200,000 children from the second to the eighth years inclusive, the results have been equally impressive. This does not mean that the posture of the children never fluctuates; it will be subject to fluctuation throughout their lives. It does mean, however, that the school has done what may fairly be expected of it and that a large and steadily increasing number of children are acquiring permanent habits of correct carriage.

In conclusion, I want to point out that it is possible, though by no means simple or easy, to apply these methods to other phases of physical development and health conditions. At present our reports on the status of physical training and health in our American schools and colleges are made up chiefly of answers to such questions as these: "How much time do you give to physical training?" "Is it compulsory?" "Have you a gymnasium? A swimming pool? Tennis court?" "How many instructors have you in the physical training department?" "What are their salaries?" "Do you have a medical examiner?" "How often are medical examinations made?" While such information is necessary and important I submit that it relates entirely to the working machinery or equipment for work, and gives not one fact as to the results with the students. How many of the students in this preparatory school or that college can pass a standardized test for posture? How many are free from headaches and indigestion? How many can run a block, or two, or five, without distressed breathing? How many have slept normally a reasonable proportion of the time? How many are free from the easily remedied minor medical defects of teeth and tonsils and eye-strain? How many have slept in a maximum of fresh air? Or taken a daily bath? Or have walked two miles or more on 85% of the school days? How many have played 25 times some outdoor game, as tennis, or golf, or hockey, and acquired thereby a skill and interest that will carry into the future? These and similar things are the means by which we should judge of the efficiency of an institution in regard to the health of its students, and it is just as practicable to group a series of such data in a standardized test as to have the uniform entrance requirements for college that are now used in academic lines. Please notice that this is all from the positive side—stated in terms of functional normality, power and endurance—in terms of achievement. This is the viewpoint of the efficiency engineer. The spirit of these efficiency methods is eminently constructive. When such tests obtain, and we speak of this or that college as having high standards, it will mean, not alone that it gives the hardest examinations, or requires

the most advanced Greek or calculus; it will mean that it graduates 85% or 95% of its students able to pass the standardized tests for health. Let a school issue such a statement as to the health efficiency of its graduates and it is easy to predict that its accommodations will not be equal to the applications for admission. Then will our young people be fitted to cope with the tremendous strain of modern life. Then will they come to their graduation, not as so many now do, spent and exhausted, like a runner to the end of the race; but, please God, stepping forth into the morning of life balanced and wholesome, ready indeed, to help the world on toward the greater and higher things of the future.

THE PREVENTION OF NEARSIGHTEDNESS IN CHILDREN BY MEANS OF SHOULDER BRACES AND BY KNAPSACKS FOR SCHOOL BOOKS

BY

LUCIEN HOWE

For the purpose of clearness, it is desirable to recall for a moment the structure of the normal eye, even if that seems to some quite unnecessary. We must remember that the outer or white layer of the globe, called the sclerotic coat, although composed of firm, tough material, is still elastic, and can be somewhat stretched. The layer next inside of this, or the choroid, is made up largely of blood vessels, is quite firmly attached to the sclerotic, and can also be distended without great injury. The third layer—the retina—like the sclerotic, is white. It is composed of innumerable small terminals of the optic nerve, which spread out to form a thin delicate mesh attached only loosely to the choroid. The retina, however, is not elastic. Inside of these three layers is the greater part of the posterior cavity of the eye, filled with vitreous humor. The front part of the eye, composing the lens and other portions, need not occupy us at present.

For our purpose, however, it is important to note the manner in which the blood enters and leaves the eye. It is pumped into the globe by numerous small arteries near the front and back. Nearly all of these arteries go to the choroid, or to its extension in front which we call the iris.

The manner in which the blood leaves the eye is interesting. After supplying the choroid through a network of small vessels, the blood is then gathered up by half a dozen or more single large veins which, from their form, are called the *venae vorticosae* (Fig. 1. Vo). These are not unlike the spokes of a wheel converging to the hub. But the one resulting vein at the center, or hub, does not leave the eye by passing straight out through the sclerotic. Instead of that, each such vein passes rather obliquely outward and backward, in such a way that the inner and outer fibres of the sclerotic coat act together as a sort of valve to impede the return circulation. (Fig. 2.)

In other words, if the human animal sits and stands erect, and keeps the head well poised on the spinal column, it is easy for the blood to get into the eye and out again. If, however, the head is bent forward, the blood tends to stagnate in the globe, as it were. These elementary

points in anatomy and physiology must be recalled in this connection, even though they are or were familiar to every one.

The next point for us to recall is one equally well known,—namely, that the nearsighted eye is not a globe. It is an ellipsoid—somewhat like an egg, or sometimes like an egg with an additional bump near the enlarged end.

The fact is that something has enlarged the globe of the eye. The retina (which corresponds to the glass plate of the camera) has been pushed farther back than normally from the lens in front—the camera has been lengthened. The result is that the only objects which can be focused on the retina are those near at hand. Therefore the person who has such an enlarged globe we say is nearsighted. It should be understood that this distension of the lobe is not at all a matter of theory, but by various simple means we can determine not only the existence of this distension of the globe, but we can also measure the exact number

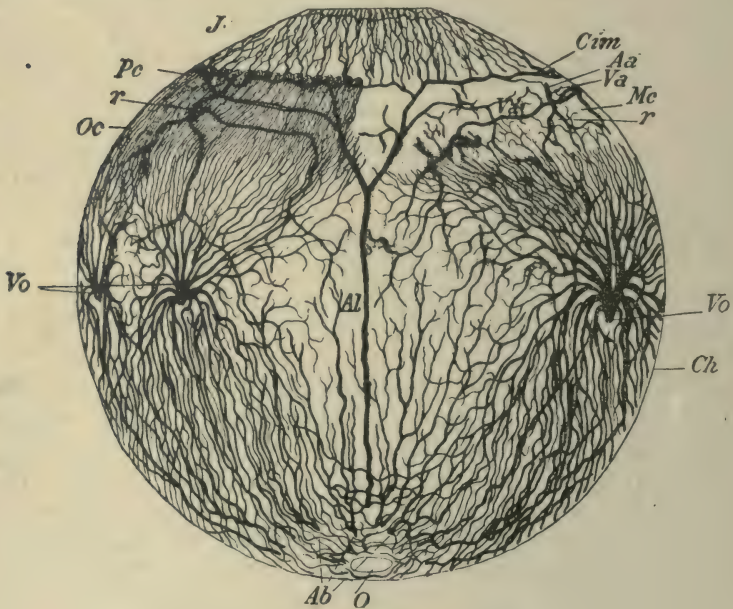


Figure 1

Blood supply of the choroid coat. [Copied from Leber.]

Al Long ciliary artery.

AA Anterior ciliary arteries.

Vo Venae vorticosae.

of millimeters of the lengthening of the diameter of the globe from before backwards. In fact, we can measure that within a fraction of a millimeter.

Moreover, by means of that wonderful little mirror given to us by Helmholtz, the ophthalmoscope, we can see with perfect distinctness the disaster which this distension has often wrought in the interior of the eye. Great patches of the choroid are frequently found atrophied and useless, thus impairing the vision to a considerable extent. Or if the globe continues to enlarge, the sclerotic stretches somewhat and the choroid also stretches. But the retina cannot be stretched to any considerable degree. Therefore it often pulls away from the choroid and sclerotic. Then we have a so-called "detachment" of the retina, with more or less total loss of vision. For this sad condition, unfortunately, little or nothing can be done.

In a word, nearsightedness is not the simple inconvenience which many persons consider it. It is a disease, and the time to arrest that disease is during school life.

The next point for us to bear in mind is that this distension of the globe is caused by the hydrostatic pressure of the blood. At first this seems impossible, until we remember how great is the force of hydro-

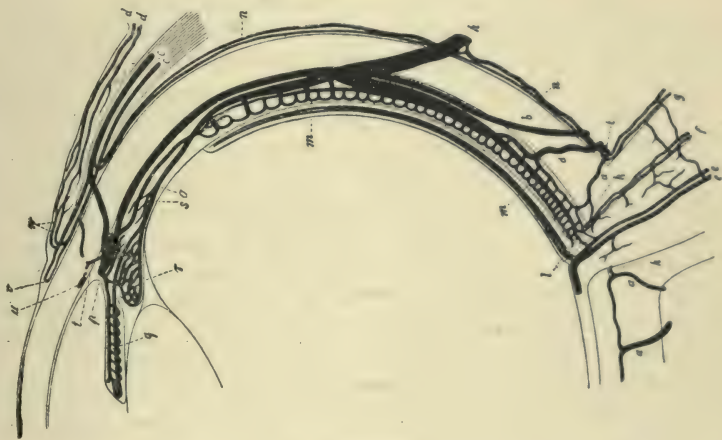


Figure 2

Section through the eye showing the blood supply of the choroid coat.
[Copied from Leber.]

cc Anterior ciliary arteries.

h One of the venae vorticosae. The section at this point shows the oblique direction of this vein through the sclerotic coat, and how the latter may act as a valve to obstruct the blood as it flows out of the eye.

static pressure. Anyone will appreciate that, who has watched the working of an old fashioned cotton press where the water trickles down through a small tube into a bellows-like arrangement, and has then seen the enormous pressure developed in those bellows simply by the gravity of the water flowing down the small vertical tube. The same principle is used in another way with hydraulic elevators, and in numerous other familiar constructions which illustrate the power of hydrostatic pressure.

Now, comparing the eye to the bellows of the cotton press, the arteries together form the small tube through which the fluid flows into the bellows. When the head is erect the blood flows backward through the *venae cavae* and out through the veins with little or no difficulty; but if the head is bent forward, surely if the head of a young person is bent down for a considerable time as children are allowed to bend over their desks by the hour in nearly every school, then a stagnation of blood in the globe takes place, with development of hydrostatic pressure. The result is a nearsighted boy or girl.

From the foregoing it is evident that if we would prevent nearsightedness with all of its inconveniences, and sometimes disastrous results, the most important precaution by all odds is simply to make the *child sit up straight*.

Every teacher knows that rules for this are seldom heeded. To lecture or talk means simply constant correction and fault-finding and nagging which tires the teacher, makes the child irritable, and lessens and ultimately destroys a confidence and companionship, which but for that one bone of contention might otherwise exist between the teacher and pupil. The best means to develop in a given child the habit of maintaining an erect position of the body and head is some method which is applicable not only to the school, but to the hours in the evening when the child learns his lessons at home, and also when going to and from school, or even to the hours spent in play. Evidently this means some mechanical appliance for keeping the shoulders thrown back, the shoulder blades well applied to the ribs, and the head naturally poised on the vertebrae. This, of course, means shoulder braces. By that term we too often understand some complicated or costly arrangement with various attachments. Undoubtedly many of these are not only useful, but are comparatively comfortable and convenient to wear. One trouble is that if much buttoning is required, the child neglects that part of his toilet either intentionally or from forgetfulness, and the result is that he puts the braces on, but not in such a way as to be of any use. The other objection is that they are more or less costly, and in considering any question like this economy is an important factor.

Those which can be attached to the trousers or skirts in some convenient fashion are perhaps the most comfortable, and of course are elegant in proportion to their cost. The practical fact is, however, that a very useful and excellent form of shoulder brace can be made out of a simple strap of leather or webbing, which costs ten or fifteen cents at the maximum. After the usual clothing has been put on, except the waist of the girl's dress or the boy's coat, the child throws the strap over his head, brings one end, preferably that with the buckle, under the right arm, the other end under the left arm, and then buckling the two ends of the strap in the center of the back, he tightens the strap to any extent desired.

At first the strap should be left rather loose; otherwise it is painful or inconvenient, or at least the pupil is always conscious of it. In a short time that wears away, and the boy or girl thinks no more of it than of a collar. After the first week or two the strap can be tightened one notch, after another week another notch, and so on, until the wearing of such an appliance becomes second nature. The beneficial effects are undoubted and great.

While it is easy thus to theorize about the advantage of shoulder braces in any form, it is sometimes difficult to have them worn persistently.

But with the proper tact this can usually be accomplished. The first thing is to appeal to the pupil's pride. Much might be said on this score. Probably the best examples of the success of this plan are shown in the New York schools. These are referred to in the last report made by C. Ward Crampton, Director of Physical Training of the New York schools. It need only be mentioned that the "setting up" exercises have been found so enjoyable that they have been used in New York with the utmost success. But suppose the appeal to pride is not sufficient, what next? Then—indeed, always, in every school, each pupil should be marked for improvement in posture—just as for improvement in arithmetic or grammar. Is not the escape from nearsightedness or spinal curvature or other ills, to say nothing of the gain in general appearance and grace, quite as important to a child as any one study? At least modern educators so consider it, and mark accordingly.

Another way to keep the child erect is to screw a head rest to the desk. Such head rests were described first by Prof. Cohn of Breslau. More recently I have had another head rest made which, although intended originally to hold the head steady during exact measurement of the eye, can also be modified so as to have it fit the ordinary school desk. But none of these are as useful as the shoulder brace.

Knapsacks For School Books. From what has been said of shoulder braces it is evident that some arrangement on the principles of the soldier's knapsack would act as one of the best forms of shoulder braces. This fact is so familiar to German teachers and even to travelers in Germany, that it would seem unnecessary to refer to it here, but for its importance, and because this excellent remedial measure has been thus far neglected in our American schools. In Germany even small boys going to and from school carry their books in knapsacks made after the fashion of those which their fathers carried during their term of military service, and like to those which the boy himself will carry when he is old enough to begin his term of enlistment.

The stranger who observes this habit casually is apt to conclude that it is simply due to the imitative nature of the boy, or another evidence of excessive militarism. But though the boy does this partly for pleasure and convenience, a more important reason is to prevent him from becoming nearsighted.

It is not only a preventive of nearsightedness, but it is convenient. It holds the books and his luncheon, and it leaves the hands free for the various activities natural to the youngster, in crowding and pushing other boys as the groups go to and from school.

Moreover, it can be worn not only by boys, but is convenient for girls, and is sometimes worn by those who are old enough to have outgrown dolls, and whose pride one would naturally think would make them averse to any part of a boy's uniform.

It may be objected that the question of cost of the knapsack is an important consideration. The expense is not as great as might be supposed. At a cost from fifty cents to a dollar a very useful knapsack can be bought. This is a small price to pay for keeping a child from developing nearsightedness, with all that that means to him in exclusion from many useful pursuits during his entire life, to say nothing of fees paid meanwhile to oculists. In a word, the title of this paper seems justified. With shoulder braces, and with knapsacks for school books, we can help to prevent nearsightedness in children, better than in any other way available to teacher or parent.

NEW REGULATIONS FOR THE CONTROL OF INFECTIOUS DISEASES IN SOME OF THE PRIVATE SCHOOLS OF NEW YORK CITY

BY

A. EMIL SCHMITT

For several years it has become increasingly difficult to pass upon the question of admitting or excluding pupils, teachers and other school attendants who have either been suspected of suffering with an infectious disease, or who have returned to school after such illness, or who have come in contact with a contagious case at home or in school, and also those who have or have not been affected with such a malady and thus may be considered immune to reinfection.

At the Ethical Culture School it has been my practice to give the most liberal interpretations possible within the dictates of common sense in rulings of this kind, having constantly in mind the desire to prevent, as far as possible, unnecessary loss of school attendance of both pupils and teacher with adequate protection of those with whom they come in contact.

The mode of procedure at the Ethical Culture School is as follows: A pupil showing symptoms of illness is sent by the teacher from the classroom to the office of the physical director. If an infectious disease is suspected, the director requests me to examine the child or sends him to my private office, which is near by. If a contagious disease is present, the home is immediately notified to call for the child. All the pupil's effects are removed from his desk, papers of no value are destroyed and books of value are fumigated in a formaldehyde disinfecting cabinet. (The books are opened back to back and stood up so all the leaves are separated and submitted to the fumes for thirty minutes.) The classroom in which the pupil attended is then fumigated with formaldehyde vapors, all desks and closets being wide open. So also the locker rooms. The floors, seats and benches are washed with a 1-1000 sublimate solution. The pupil is excluded until the required period of isolation has elapsed. In those diseases for which the health department requires certificates for readmission, *i. e.*, diphtheria, scarlet fever, measles, chickenpox and smallpox, the pupil is not readmitted until such a certificate has been furnished. On all other reportable diseases, such as mumps, whooping cough, etc., the statement of the family physician alone is accepted for readmission, provided the pupil does not show

symptoms still indicative of possible contagion. The kindergarten rooms and lower grades with lockers are thoroly fumigated twice monthly; all other locker rooms are fumigated once a month. Daily, after school hours, the entire building is flooded with fresh air for an extended period. Whenever occasion demands, extra precautions, such as omitting assemblies, lengthening the period of quarantine, etc., are adopted. School materials are not used in common by the children. Individual drinking glasses and dishes used in class and lunch rooms are properly sterilized twice weekly. The entire milk supply furnished to pupils and teachers is pasteurized on the premises. Formaldehyde soap powder and tissue paper towels *only* are used in all the lavatories. The sand used in some of the lower grades, when infection has occurred in these classes, is thoroly baked and used again. Those who are sneezing or coughing, if suffering with a cold, are excluded; but if in the subacute stage of bronchitis they are admitted, provided they have had whooping cough previously. During the coming year fumigation of rooms will be omitted, but more attention will be given to the exclusion of contact cases, especially those in front, behind and on either side of an infected pupil.

One of the rules of the Ethical Culture School is: "That in cases of a contagious nature referred both to the school physician and Board of Health, where there is any difference of opinion, the ruling of the Board of Health prevails." Therefore, it has occasionally happened that, after ruling in a given case, the same was submitted to the Health Department and the authority consulted, basing his opinion on the Department's cast iron rules, would decide contrary to my own ruling. As an instance I would cite the following case among others, viz: One of the teachers had a case of measles occur in his family and the question arose whether he should be permitted to attend school after disinfection of his person and a change of clothing and return to school from another address, remaining away from the patient during the entire period of isolation. My ruling in the matter was that altho the teacher, who is on in years, had not had measles in his childhood, the chances of contracting the disease so late in life were so remote that there would be practically no risk. He was also instructed to report at the office of the Physical Director each morning for examination of his conjunctivae, mouth, throat and skin during a possible incubation period to minimize the small risk involved. The Health Department ruled that, according to its regulations, readmission would be after fourteen days when coming from another address. To give another instance: In cases of mumps, my plan has been to admit other children of the family, altho they have *not* had the disease, but to submit them to a daily examination of the mouth and the region of the salivary glands and thus save them the loss of attendance at school, during the nineteen to twenty-one

days of possible incubation period, during which time they were not dangerous to others. The ruling of the Health Department in this disease would be, if a pupil has not had the disease, to exclude until the termination of the case. If the excluded pupil was not infected by a previous case, but was infected by his brother or sister, he would naturally not come down for some nineteen days or more, and thus the days for which he was excluded during the illness of his brother or sister, which might last only a week or ten days, would have been wasted and he still remains a source of infection for two subsequent weeks, during which time the Health Department has no further interest until he actually comes down with the disease.

It is true that, weighing all the data submitted on each individual case, it is possible for me as an independent adviser to give a more reliable ruling than when bound by very definite regulations; but I admit the impracticability of laying down rules with such liberal interpretations for general practice, as they would not be feasible in schools other than those under constant supervision of a medical adviser.

The New York Health Department, like most other health departments, takes into consideration the other children of a family only insofar as they have become infected from the same source and at the same time as the patient, but developing at a somewhat later date; yet it does not take into account the possibility of the members of the same family becoming infected from the patient and exclude in accordance with known incubation periods. To quote another instance, the Meriden, Conn., Health Department excludes other members of a family with measles for ten days. Most authorities admit that the incubation period is from eleven to fourteen days. For German measles the same exclusion period of from ten to fourteen days is enforced, while the incubation period is usually from fourteen to twenty days. So with mumps a ten day exclusion with a known period of from nineteen to twenty-one days. In this instance, again, as above stated, the exclusion period is to give range for the contact cases to come down almost at the same time as the reported case, but giving a few days leeway to develop from the original exposure.

I wish it distinctly understood that I do not desire to hold up for criticism the Health Department regulations cited, but merely to emphasize how much need there is for discussion and a common understanding where now, as I have pointed out to you, there is so much inconsistency and great variance.

Printed health rules and practices at so many private schools are so varied and those of so many health departments so inconsistent for a complete prevention of contagious diseases, that uniformity on this subject is most desirable. In order, therefore, to formulate a definite

set of rules for the Ethical Culture School, which could be used by the Physical Director and the Superintendent and for the general information of all the parents, I began to consult many authorities on infectious diseases, children's diseases, school hygiene and regulation of departments of health and found a great diversity of opinion as to the incubation and isolation periods as well as quarantine periods suggested for contact cases. I tabulated the findings of some twenty authorities as to the incubation, isolation and quarantine periods of what I would designate as the "big seven" or readily contagious diseases (*i. e.*, diphtheria, scarlatina, measles, rubella, varicella, pertussis, parotitis), compared with those which are less communicable, (*i. e.*, pulmonary tuberculosis, poliomyelitis, cerebrospinal meningitis, typhoid fever, ophthalmia, ringworm, scabies, impetigo, etc.), which are not taken into account in this article, the former requiring our more frequent consideration as school officers. Thus, of some half dozen or more each of American, English and German authorities, the incubation period of measles ranged from five to twenty-one days, the majority stating ten to fourteen days; German measles five to twenty-one days, the majority limiting it to from fourteen to twenty days; scarlatina from one to fourteen days was given, the majority stating from two to five days; chickenpox from twelve to twenty-eight days, the majority giving twelve to seventeen days; diphtheria, from one to eight days, the majority two to five days; whooping cough two to fourteen days, the majority seven to fourteen days; mumps seven to twenty-five days, the majority fourteen to twenty-one days. This naturally has a most important bearing upon the quarantine of contact cases, which form the largest majority of pupils who require our consideration. Therefore, this is more important for a mutual understanding than the isolation period of the patient for whom, in most instances, definite rules have been laid down. Furthermore, the manifest symptoms of the patient make it easier for the examining physician or school authority to insist upon a definite exclusion period, as the parent or guardian can be more readily impressed by visible signs of disease. The general ignorance as to the incubation period of infectious diseases amongst the laity makes it difficult to convince parents of the necessity for prolonged exclusion. Hence, with the indefiniteness of this subject amongst all concerned it becomes a repeated source of argument between parents, family physician, health department officials and school authorities.

A particular reason for complaint on the part of the parent in our private schools is that a tuition fee, which in many instances is large and is generally paid in advance (thus, from the parents' viewpoint, entailing loss of both money and instruction) is an additional argument why their children should under no circumstances be unnecessarily

excluded. Add to this the well substantiated argument of investigators like Dr. Ayres, of the Russell Sage Foundation, that retardation to a great degree depends upon loss of school days; and taking into consideration the loss of time and instruction, which will either be lost for good or will possibly eventuate in the pupils making up the same grade twice, the additional year or half year becoming thus deducted from the individual's life work, it certainly behooves us to give as much thought to this phase of the subject as to that of protection.

I welcomed, therefore, with much pleasure and great satisfaction, a conference called by the superintendent of the Brearly School of New York, who had invited representatives from a dozen or more of the foremost and largest New York private schools to come together and formulate a set of health rules which the superintendents or masters and medical advisers of all New York private schools, who desire to do so, would accept as a guide to all cases which would require their consideration. A subcommittee, consisting of Dr. Rowland G. Freeman of the Charlton School; Dr. William K. Draper of the Brearly School, and the writer, was appointed to formulate a set of health rules which could readily be agreed to by all concerned and thus bring about a uniformity where heretofore there has been constant argument on the part of school authority and parent with an opinion of a family physician or the Health Department coming in conflict. Misunderstandings have been particularly frequent in some of the larger schools which are conducting two or more separate departments. Thus, a girl attending one department would find that when a contagious disease had occurred in the family that the rule for quarantine or isolation differed from that for her brother who was attending the boys' department or from that of another brother or sister attending some other private school. My own attitude on this committee was to take into consideration the list of incubation, isolation and quarantine periods of the eminent authorities of three nations, which I had compiled, and to determine what would be the safety point of isolation and quarantine, based upon these findings, excluding children for the shortest possible period without at the same time taking any undue risk for other pupils with whom they may come in contact.

One means of saving unnecessary loss of school days is to admit the pupil during a certain number of days of a possible incubation period, during which time it is admitted that there are present no symptoms by which it could be inferred that the infection could be conveyed. This has been very forcibly brought out in the most excellent volume on infectious diseases by C. R. Ker of Edinborough, published in London in 1909. Dr. Freeman also has particularly accentuated this point for introduction into the new health rules on account of his practical

experience, having carried out this scheme for a number of years in several private schools with which he has been connected, and particularly in the Charlton School.

These rules have been drawn up with three points in view: (1) That of maximum safety for the prevention of the spread of infection. (2) That of the minimum number of days of unnecessary exclusion. (3) The maximum number of days at school of contact cases at a time when infection was not to be feared.

I will now present to you these health rules as finally agreed upon in committee, but you will readily understand that, owing to the provisions of the sanitary code and the regulations of the New York Health Department, which would make the carrying out of some of the provisions unlawful, their adoption at the present time by New York private schools would be possible only by a very extensive modification. I will state further that they were submitted for approval to the New York Health Department at a meeting at which representatives of various bureaus, especially those of school inspection, contagious diseases and child hygiene were present. After extended discussion it was decided that owing to existing regulations it was impossible to give them official recognition.

The following circular of general information is mailed to the home of each pupil:

Health Rules

It is hoped that parents and family physicians will coöperate in the effort which is being made to reduce to the minimum the chances of spreading disease, and that this action will be regarded as a necessary precaution which the school is bound to take for the protection of the pupils.

Parents are most urgently requested to keep at home a pupil who shows symptoms of any form of cold or indisposition. In this way only can infectious colds and contagious disease be checked from spreading in the school.

Notice *must* be sent to school whenever *any* infectious disease breaks out in the home of a pupil.

It is urgently requested that information be given of any other exposure to infectious disease on the part of any pupils of the school.

It is also suggested that when children, who have been exposed to infectious diseases, are excluded from school, they should likewise be kept from visiting their schoolmates, and from attending Sunday Schools, gymnasiums, clubs, parties and dancing classes.

If during the morning a pupil should develop symptoms of a cold or other malady that might prove infectious, the pupil will be isolated from the class and notification sent to the parents.

Parents are advised of the wisdom of seeing that children who have been exposed to infectious diseases use antiseptic mouth washes, gargles and nasal sprays.

The Board of Health requires that all children attending any school shall be vaccinated. Parents are therefore requested to see that this has been done. Certificates of revaccination may be required as occasion demands.

The practice of vaccinating against typhoid fever is brought to the notice of parents and the suggestion made that they should consult their family physicians regarding this preventive measure.

On returning to school after an absence a pupil will be required to bring a written statement from the parents stating the reason for the absence.

* * * *

Besides this the more specific directions for each infectious disease is printed on the back of a card, the front of which has blank spaces to be filled out by the family physician and brought back by the returning pupil, stating that the case is terminated and that all proper measures have been taken to prevent conveyance of the disease to others.

The rules are as follows. But in order to make them clear and to meet every contingency, Dr. Freeman divided all cases into one of three classes with several subdivisions each, as you will see below:

- I. The case itself.
- II. Children of the family.
 1. Kept at home.
 - a. Who have not had the disease.
 - b. Who have had the disease.
 2. Sent from home.
 - a. Who have not had the disease.
 - b. Who have had the disease.
- III. Exposed at school.
 - a. Who have not had the disease.
 - b. Who have had the disease.

* * * *

Diphtheria and Membranous Croup

I. After an attack of this disease no pupil may return to school until two successive cultures from the throat and nose have proved the absence of the infectious bacteria.

II. 1. a. Pupils of the same family, who have not had this disease, if they remain at home, may not return to school during the existence of the case. At conclusion of the case, pupils may return to school, if immunized—after cultures from the throat and nose on the two preceding days have proved negative. If not immunized—on the sixth day, provided examination of cultures from throat and nose on the two preceding days have proved negative.

b. Pupils of the same family, who have had the disease, if they remain at home, may not return to school during the existence of the case. At the conclusion of the case pupils may return to school if immunized—after cultures from throat and nose on the two preceding days have proved negative. If not immunized—on the sixth day, providing examination of cultures from throat and nose on the two preceding days have proved negative.

II. 2. a. Pupils of the same family, who have not had this disease, if at once withdrawn from the house where the disease exists, may return to school, if immunized—after two successive cultures from the throat and nose have proved the absence of infectious bacteria, if not immunized—on the sixth day, provided two successive cultures from the throat and nose on the two preceding days have proved negative.

b. Pupils who have had this disease, if at once withdrawn from the home where the disease exists may return to school if immunized—after two successive cultures from the throat and nose have proved negative—if not immunized—on the sixth day provided two successive cultures from the throat and nose have on the two preceding days proved negative.

III. a. Children exposed at school, who have not had this disease, if immunized, may return to school after two successive cultures from the throat and nose have proved negative. If not immunized—on the sixth day, if two successive cultures from the throat and nose have proved negative on two preceding days.

b. Children exposed at school who have had this disease, if immunized—may return to school after two successive cultures from the throat and nose have proved negative. If not immunized, on the sixth day if two successive cultures from the throat and nose have proved negative on two preceding days.

* * * *

Scarlet Fever (Scarlatina)

I. After an attack of this disease, no pupil may return to school until five weeks after the first manifestation of the disease, whether mild or severe; and until desquamation is complete, and all catarrhal symptoms or purulent discharges shall have ceased, and until after careful disinfection.**

II. 1. a. Pupils of the same family, who have not had this disease, if they remain at home, may not return to school during the existence of the case, nor until the sixth day after the last exposure, and after careful disinfection.

b. Pupils of the same family who have had this disease, if they remain at home, may not return to school during the existence of the disease nor until after careful disinfection.

II. 2. a. Pupils of the same family, who have not had this disease, if at once withdrawn from the home in which the disease exists, may return to school after five days.

b. Pupils of the same family, who have had this disease, if at once withdrawn from the home in which the disease exists may return to school immediately after careful disinfection.

III. a. Children exposed at school who have not had this disease, may return to school after five days.

b. Children exposed at school, who have had this disease may return to school immediately.

Measles (Rubeola)

I. After an attack of this disease, no pupil may return to school until fourteen days after the appearance of the rash and the complete disappearance of the catarrhal symptoms and until after careful disinfection.

II. 1. a. Pupils of the same family who have not had this disease, if they remain at home may not return to school during the existence of the case nor until the fifteenth day after the last exposure, and after careful disinfection.

b. Pupils of the same family who have had this disease if they remain at home may not return to school during the existence of the disease and only after careful disinfection.

2. *a.* Pupils of the same family, who have not had this disease if at once withdrawn from the home in which the disease exists, may after careful disinfection remain at school for seven days after exposure; they will then be excluded from school from the eighth until the fifteenth day.

b. Pupils of the same family who have had this disease if at once removed from the home where the disease exists may return to school immediately after careful disinfection.

III. *a.* Children exposed at school, who have not had this disease may remain at school for seven days after exposure; they will then be excluded from the eighth until the fifteenth day.

b. Children exposed at school who have had this disease may return to school immediately.

* * * *

German Measles (Rubella)

I. After an attack of this disease pupils may return to school on the eighth day after the appearance of the eruption provided desquamation has entirely disappeared, and after careful disinfection.

II. 1. *a.* Pupils of the same family who have not had the disease, if they remain at home, may not return to school during the existence of the case nor until the twenty-first day after the last exposure and after careful disinfection.

b. Pupils of the same family who have had this disease if they remain at home, and the case is carefully quarantined, may return to school immediately after careful disinfection.**

2. *a.* Pupils of the same family who have not had the disease, if at once withdrawn from the home in which the disease exists, may after careful disinfection remain at school for nine days after exposure; they will then be excluded from the tenth until the twenty-second day.

b. Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school after careful disinfection.

III. *a.* Children exposed at school who have not had this disease may remain at school for nine days after exposure; they will then be excluded from the tenth until the twenty-second day.

b. Children exposed at school. who have had this disease may return to school immediately.

* * * *

Chicken-Pox (Varicella)

I. After an attack of this disease, pupils may not return to school until two weeks after the appearance of the eruption and until the crusts have fallen and the scars are completely healed, and until after careful disinfection.

II. 1. *a.* Pupils of the same family, who have not this disease if they remain at home, may not return to school during the existence of the case, nor until the twenty-second day after the last exposure, and after careful disinfection.

b. Pupils of the same family, who have had the disease if they remain at home and the case is properly isolated, may return to school immediately after careful disinfection.

2. *a.* Pupils of the same family, who have not had the disease, if at once withdrawn from the home in which the disease exists, may after careful disinfection remain at school for ten days after exposure; they will then be excluded from the eleventh until the twenty-second day.

b. Pupils of the same family, who have had the disease if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.

III. *a.* Children exposed at school, who have not this disease may remain at school for ten days after exposure; they will then be excluded from the eleventh until the twenty-second day.

b. Children exposed at school, who have had this disease may return to school immediately.

* * * *

Whooping Cough (Pertussis)

I. After an attack of this disease, pupils may not return to school for six weeks and until one week after the last characteristic cough, and after careful disinfection.

II. 1. *a.* Pupils of the same family, who have not had this disease, if they remain at home may not return to school during the existence of the case nor until after fourteen days after the last exposure, provided no cough has developed, and after careful disinfection.

b. Pupils of the same family who have had this disease, if they remain at home and have no cough may return to school immediately provided the case is properly quarantined and after careful disinfection.

2. *a.* Pupils of the same family, who have not had this disease, if at once withdrawn from the home in which the disease exists, may return to school after fourteen days if no cough has developed and they have been carefully disinfected.

b. Pupils of the same family who have had this disease, if at once withdrawn from the home in which the disease exists, may return to school immediately after careful disinfection.

III. *a.* Pupils exposed at school, who have not had this disease will be excluded from school for fourteen days after exposure, when they may return provided no cough has developed.

b. Pupils exposed at school, who have had this disease may return to school immediately.

* * * *

Mumps (Infectious Parotitis)

I. After an attack of this disease pupils may return to school in one week after the disappearance of the swelling and after careful disinfection.

II. *a.* Pupils of the same family, who have not had this disease, if they remain at home, may not return to school during the existence of the case nor until the twenty-second day after the last exposure and after careful disinfection.

II. 1. *b.* Pupils of the same family, who have had this disease, if they remain at home may return to school immediately, provided the case is properly quarantined and after careful disinfection.

II. 2. *a.* Pupils of the same family who have not had this disease if at once withdrawn from the home in which the disease exists, may after careful disinfection remain at school for eleven days; they will then be excluded from the twelfth until the twenty-second day after exposure.

b. Pupils of the same family who have had the disease if at once withdrawn from the home in which the disease exists may return to school immediately after careful disinfection.

III. *a.* Pupils exposed at school who have not this disease, may remain at school for eleven days; they will then be excluded from the twelfth until the twenty-second day after exposure.

b. Pupils exposed at school who have had this disease may return to school immediately.

* * * *

Influenza (Grippe) and Common Cold

Pupils suffering from either of these diseases may not return to school until completely recovered.

Pupils suffering from any other contagious and communicable diseases not mentioned above will be excluded from school.

**By careful disinfection is meant a change of clothing after washing the entire body and hair with soap and water; brushing the teeth, rinsing the mouth, gargling the throat and douching or spraying the nose with an antiseptic solution.

Altho the rules as formulated, representing advanced views in the control of infectious diseases, run counter to the existing regulations of departments of health, and for this reason it has been impossible for our committee to recommend them for final adoption to the private schools of New York, the main purpose of my article is to bring this vital subject before the Congress for its consideration and discussion in order to crystallize some definite opinion out of the present chaotic state amongst health departments of our country and those abroad and for the ultimate purpose of having some uniform rules incorporated in our national quarantine regulations.

If no special action can be taken at present, the suggestions should at least become a source for thorough experimentation and final determination as to what should constitute the minimum period of perfect safety for isolation of infectious cases and for quarantining contact cases and the maximum period of school attendance for such as are no source of danger to those with whom they come in contact.

REFERENCE CHART FOR SCHOOL AUTHORITIES

DIPHtheria—ISOLATION OF CASE

Until examination of cultures from throat and nose on two successive days have proved negative.

(New York Health Department: Readmitted after all symptoms disappeared and cultures negative. London Health Department: Until fortnight after disinfection of premises.)

I. KEPT AT HOME.

(a.) *Who Have Not Had Disease.* If immunized, during existence of case, nor until examination of cultures from throat and nose on two successive days after the termination of case are negative. If not immunized, until after the fifth day after conclusion of case, or until examination of cultures from throat and nose on the two preceding days are negative.

(New York Health Department: During duration of disease. London Health Department: Fourteen days after disinfection of premises.)

(b.) *Those Who Have Had the Disease.* If immunized. During the existence of case and until examination of cultures from throat and nose on two successive days after termination of case are negative.

If not immunized. Until after the fifth day after conclusion of case or until examination of cultures from throat and nose on the two preceding days are negative.

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME

(a.) *Those Who Have Not Had the Disease.* If immunized. Until examination of cultures from throat and nose on two successive days are negative.

If not immunized. Until after the 5th day, provided examination of cultures from throat and nose on the two preceding days have proved negative.

(New York Health Department: Readmit when trial cultures from both nose and throat is negative. London Health Department: Fourteen days following date when case was certified.)

(b.) *Who Have Had the Disease.* If immunized. Until examination of cultures from throat and nose of two successive days are negative.

If not immunized. Until after the 5th day provided cultures from throat and nose on the two preceding days have proved negative.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* If immunized. Until examination of cultures from throat and nose on the two preceding days have proved negative.

If not immunized. Until after the 5th day, provided examination of cultures from throat and nose on the two preceding days have proved negative.

(b.) *Who Have Had It.* If immunized. Until examination of cultures from throat and nose on the two preceding days are negative.

If not immunized. Until the 6th day, provided cultures from throat and nose on two preceding days have proved negative.

SCARLET FEVER—ISOLATION OF CASE

Five weeks and until desquamation is complete and all purulent discharges and catarrhal symptoms have ceased and after careful disinfection.

(New York Health Department: Same. London Health Department: Until fortnight after disinfection of premises.)

I. KEPT AT HOME

(a.) *Who Have Not Had Disease.* During existence of case and until the 6th day after last exposure and until after careful disinfection.

(New York Health Department: Until termination of case. London Health Department: Fourteen days after disinfection of premises.)

(b.) *Those Who Have Had the Disease.* During existence of case and until after careful disinfection.

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME

(a.) *Those Who Have Not Had the Disease.* Until 6th day.

(New York Health Department: After 5 days. London Health Department: Fourteen days following date when case was certified.)

(b.) *Who Have Had the Disease.* Until after careful disinfection.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* Until after the 5th day.

(b.) *Who Have Had It.* No isolation.

MEASLES—ISOLATION OF CASE

Fourteen days and the complete disappearance of the catarrhal symptoms and until after careful disinfection.

(New York Health Department: Two weeks or until desquamation is complete and catarrhal discharges have ceased and cough stopped. London Health Department: At least four weeks.)

I. KEPT AT HOME

(a.) *Who Have Not Had Disease.* Until existence of case and until after the 14th day after last exposure and until after careful disinfection.

(New York Health Department: Until case terminated. London Health Department: Exclude until Monday following, 14 days from commencement of last case.)

(b.) *Those Who Have Had the Disease.* During existence of case and until after careful disinfection.

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME

(a.) *Those Who Have Not Had the Disease.* From 8th to 15th day.

(New York Health Department: After 14 days.)

(b.) *Who Have Had the Disease.* Until after careful disinfection.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* From 8th to 15th day.

(b.) *Who Have Had It.* No isolation.

GERMAN MEASLES—ISOLATION OF CASE

Seven days and until desquamation has entirely ceased and after careful disinfection.

(New York Health Department: One week. London Health Department: Fourteen days from date of rash.)

I. KEPT AT HOME

(a.) *Who Have Not Had Disease.* During existence of case and for 20 days after last exposure and until after careful disinfection.

(New York Health Department: Exclude all who have not had disease. London Health Department: Same as measles.)

(b.) *Those Who Have Had the Disease.* Until after careful disinfection.

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME

(a.) *Those Who Have Not Had the Disease.* From 10th to 22nd day.

(b.) *Who Have Had the Disease.* Until after careful disinfection.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* From 10th to 22d day.

(b.) *Who Have Had It.* No isolation.

CHICKEN POX—ISOLATION OF CASE

Two weeks and until crusts have fallen and scars have completely healed and until after careful disinfection.

(New York Health Department: Until all scales have disappeared. London Health Department: Two weeks or until all scales are off scalp or body.)

I. KEPT AT HOME

(a.) *Who Have Not Had Disease.* During existence of case and for 21 days after last exposure and until after careful disinfection.

(New York Health Department: Exclude as long as case exists only those who have not had it. London Health Department: Same as whooping cough.)

(b.) *Those Who Have Had the Disease.* Until after careful disinfection.

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME

(a.) *Those Who Have Not Had the Disease.* From 11th to 22d day.

(b.) *Who Have Had the Disease.* Until after careful disinfection.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* From 11th to 22d day.

(b.) *Who Have Had It.* No isolation.

WHOOPIING COUGH—ISOLATION OF CASE

Six weeks and until one week after the last characteristic cough and after careful disinfection.

(New York Health Department: Until last whoop has entirely disappeared; generally 6-8 weeks. London Health Department: As long as cough continues and at least 5 weeks from commencement.)

I. KEPT AT HOME

(a.) *Who Have Not Had Disease.* During existence of case and for 14 days after last exposure if no cough has developed and until after careful disinfection.

(New York Health Department: Exclude only if not had disease; otherwise two weeks and then watch. London Health Department: Three weeks exclusion from commencement of last case in home.)

(b.) *Those Who Have Had the Disease.* Until after careful disinfection.

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME

(a.) *Those Who Have Not Had the Disease.* Until 15th day if no cough has developed.

(b.) *Who Have Had the Disease.* Until after careful disinfection.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* Until 15th day provided no cough has developed.

(b.) *Who Have Had It.* No isolation.

MUMPS—ISOLATION OF CASE

Until one week after the disappearance of the swelling and until after careful disinfection.

(New York Health Department: Until swelling has entirely subsided. London Health Department: One week from subsidence of all swelling.)

I. KEPT AT HOME

(a.) *Who Have Not Had Disease.* During existence of case and for 22 days after the last exposure and until after careful disinfection.

(New York Health Department: Exclude until case terminated only those who have not had disease. London Health Department: Not to be excluded but watched.

(b.) *Those Who Have Had the Disease.* Until after careful disinfection.

(New York Health Department: No exclusion. London Health Department: No exclusion.)

II. ISOLATION OF CHILDREN OF FAMILY

2. WHO ARE SENT FROM HOME.

(a.) *Those Who Have Not Had the Disease.* From 15th to 22d day.

(New York Health Department: Exclude until case terminated. London Health Department: Not to be excluded but watched.)

(b.) *Who Have Had the Disease.* Until after careful disinfection.

III. ISOLATION OF CHILDREN EXPOSED AT SCHOOL

(a.) *Who Have Not Had the Disease.* From 15th to 22d day.

(b.) *Who Have Had It.* No isolation.

INFLUENZA AND COMMON COLD—ISOLATION OF CASE

During course of disease.

(New York Health Department: No regulation. London Health Department: May resume after satisfactory certificate is submitted or when teacher is satisfied that they have recovered.

When scarlet fever or diphtheria are prevalent special rules obtain.

PREVENTION OF COLDS IN PUBLIC SCHOOLS

BY

ELLEN A. WALLACE

By colds we mean not simply acute coryza as tabulated in the records of some of the medical inspectors, but an acute catarrhal condition of any mucous membrane of the respiratory tract; nor do we draw a sharp distinction between the ordinary cold and the milder cases of la grippe, but rather refer to any condition that in common parlance is termed a "cold."

The late Dr. Mary Putnam Jacobi, Professor of Therapeutics, when addressing her students on the subject of colds, gave the following instructions: "It is generally believed by the laity that a cold is of slight account, requiring neither a physician's care nor medicine, and should be allowed to run its course; but, young women, remember that, considering the sequelæ (many of which she mentioned in detail), a cold is one of the most important diseases you will be called upon to treat, and that it should always receive prompt and persistent attention until cured."

Professor Sadler of Chicago in his book, "The Cause and Cure of Colds," in speaking of the dangers arising from them, says, "Ofttimes they lay the foundation for various deadly diseases, including tuberculosis and pneumonia; together with serious disorders of the nervous system, and grave diseases of both the heart and kidneys. Colds not only are responsible for an enormous pecuniary loss, but they must be looked upon as undermining and sapping the vitality of the people; as lowering the vital resistance of the individual to other and more serious infections."

Dr. Thomas Southworth stated before the American Medical Association that in recent winters in one institution the morbidity from this source (common colds) has far exceeded that from all other infectious diseases of childhood.

Other well known authorities state that 90% of deafness is caused by diseases of the nose and throat which are, in the majority of cases, the result of the common cold.

Adenoids found by school inspection to be so prevalent among children of school age are, according to Professor Sajous, "traceable in all cases to a catarrhal state of the naso-pharynx," and the catarrhal state we well know is the result of repeated colds.

It is now the generally accepted belief among physicians, and the laity as well, that colds are highly contagious. We need not wait for bacteriologists to decide upon the specific germ of colds so long as we

can reason from analogy. It is proof enough for the individual, without further argument, if in church, school, or public hall, he has been seated near a person suffering from a cold, and within twenty-four hours finds himself sneezing or coughing with a cold well developed, and then later, one after another of his home family become likewise infected.

It is time for all thoughtful people to open their eyes to the havoc wrought by the common cold, as the extension of the acute catarrhal process to the bronchi causing death of many young children and elderly people; to the middle ear with deafness resulting, and often from there to the brain, causing death from meningitis. The glands may become infected, creating a fertile soil for the tubercle bacilli. The acute process may become chronic, the resisting power of the mucous membrane be decreased, and the vitality of the individual lowered, paving the way for other still more serious diseases.

These are but few of the sequelæ of colds which endanger the life and health of the people around us. As we open our eyes to the importance of this disease, let us turn at once to the greatest of all known remedies—that of prevention.

When we speak of the prevention of colds in public schools we do not refer to the ideal when there shall be no colds among the millions of pupils in our schools, but to the share of preventive work that should be done by school officials and teachers.

The work of municipal boards and of other public organizations, that done in the homes and by individuals will not be effectual without the added effort of those having the care of children during from one third to one-half of their waking hours. It is a well-known fact that where children—the susceptible age—are congregated, there is a hotbed for infection. We see it illustrated over and over again with scarlet fever, diphtheria, measles, and whooping cough. The rule is the same with colds, and now that we are beginning to realize the seriousness and contagiousness we must be equally active in the prevention.

In order to learn if possible, how much attention is paid by medical inspectors and school nurses to the subject of colds, I sent the following questions to the Boards of Health in forty-seven cities of the United States, and three in Canada, including some scattered from Maine to California, but not those in the far South. In some cases the questions were later sent to the school authorities:

1. Do you have medical inspection of schools?
2. Do you have school nurses?
3. Is anything done other than by general hygiene, for the prevention of colds?

If so, what?

4. Is any work done for the cure of colds if no complications and the child able to study?

5. Have you special arrangements in school buildings for drying wet clothing?

Thirty-two replies were received; of these all but two employed either medical inspectors or school nurses, and most of them both. One city reports the giving of instruction for prevention of colds; another speaks of low temperature and open air as preventives used. With these two exceptions nothing was reported as being done for the prevention of colds. Two cities report that children with colds are advised to consult their family physicians; other than these, nothing was done for cure or isolation of children infected. One city reported closed lockers for the children's clothing through which a current of air, heated to 70 degrees, is forced by means of which the clothing is not only dried, but otherwise improved. The other thirty-one cities made no provision for drying wet clothing.

In conversation with teachers of my acquaintance, teaching in city or rural schools, I have found but one who does anything for prevention, or for cure if the children are able to study. That one, principal of a grammar school, sends home any pupil having a cold, with a message to the mother to keep her child out of doors all she can. This is what should be done; no child infected with a cold should be allowed to attend school and infect other children; but until boards of education and other school officials fully realize the danger of colds and the contagiousness of them, also understand the modes of prevention, the exclusion method will in many places be impossible, therefore we must look to other ways.

First comes general hygiene—preparing the child to withstand infection by increasing bodily vigor. Every child should be taught all methods of healthful living—abundance of fresh air day and night, nourishing diets, suitable clothing, cleanliness of body, including mouth and throat, proper attention to calls of nature, dangers of cigarette smoking for the young, etc., etc.

The school room should be a model of cleanliness emphasizing the belief that soap and water are the first of all disinfectants. Floors if cleaned with a broom should never be dry swept, but sprinkled beforehand with a disinfectant solution. The temperature should never be allowed above 70 degrees and 65 is preferable. It would be well if all school rooms were equipped as those of which we read in Germany, with an automatic device so arranged that whenever the room temperature reaches 75 degrees, a gong sounds and the pupils are dismissed. High temperature increases the rapidity at which the bacteria multiply, and decreases the power of resistance of surface of the body against chilling and the mucous membrane against infection.

In questioning teachers who have tried both methods of ventilation—the open and closed—they are unanimous in their statements that plenty of open windows, open all the time, even in the coldest winter weather,

add to the good health of pupils and do away with colds almost wholly. From Providence, R. I. the report of Superintendent of Child Hygiene says: "It has frequently been noted that in the fresh air schools colds are not as prevalent as in the ordinary school. That is one of the arguments we use now in advocating more open air schools." Experiments with the open window method in Philadelphia have been conducted with most favorable results, the pupils gaining more in weight and keeping free from colds.

Furthermore, for the good health of the pupils common towels, cups, and pencils should everywhere be abolished. During the warm months all doors and windows should be screened. Ample provision should be made for drying wet clothing.

Dr. H. N. Kingsford, medical director of Dartmouth College, in an article in the Dartmouth Alumni Magazine, made the following statement in his report of preventive work:

"It was found by taking cultures of the air in recitation rooms and other halls that at times the air carried large numbers of bacteria and that some of these organisms were those usually found in colds. It was decided to disinfect these rooms whenever the number of organisms found growing on the culture plates was above thirty-five, no account being taken of varieties. The result has been remarkable as shown by the following figures. The year before beginning systematic disinfection, among the 850 men there were 121 who had either head colds or influenza. In 1910-1911 among the 1,229 men only 32 were infected." A recent communication from Dr. Kingsford says that he is still practicing the same method with gratifying results.

From personal experience in my own and other homes, I believe here lies the keynote of prevention. Several years ago believing in the contagiousness and prevention of colds, I began the following practice: When one of the members of my household, six in number, develops a cold, I fill an atomizer with a solution of formaldehyde, 1 part to 5 of water; holding the atomizer high that the spray can fall through the air, and walking backwards to inhale none myself, I go through all the living rooms after the family has retired; the sleeping room of the victim in the morning; the dining room after each meal; the bathroom and any room occupied long by my patient at other times, not forgetting the telephone, and experience has taught me plainly that whenever this procedure is carried out faithfully; no further colds develop among the other members of the house.

The latter part of the winter, a young woman teaching a rural school of twenty two pupils, consulted me at the week end for a severe cold. After the personal advice, I asked: "Are the children having many colds?" "Yes, indeed, every one of them. It is really quite terrible

the necessary disturbance from sneezing, blowing and coughing." Thereupon I provided her with an atomizer and solution to be used daily after school, giving her full directions as to method, and the caution to keep it in her own possession, never allowing the solution used by a pupil. Her report at the end of the year was as follows: "I used the atomizer every day as you directed, to the end of the year. At the end of one week the colds disappeared, and we have had no more."

Another atomizer was loaned to one of the teachers of a city primary school with a similar report.

We are well aware that it requires more than one swallow to make a summer, but these illustrations suggest the possibilities in prevention of colds from school room disinfection, and it is the belief of the writer that all school floors should be sprinkled with a disinfectant before sweeping; that every school room should be systematically disinfected once a month and oftener if an epidemic of any disease, including that of the common cold, is prevalent; and in rural schools where it is impossible to have the rooms disinfected by the town authorities, the teacher herself should apply a disinfectant by a method similar to the one described above.

Doubtless the greatest source of infection is from sneezing and coughing without covering the nose and mouth; also from the careless handling of soiled handkerchiefs, the use of the common towel and drinking cup. The two latter are fast being abolished by law, and would that the paper handkerchiefs of the Japanese were here available to be used by all infected with colds and immediately consigned to the flames. In many small schools it would be well for the teacher to be supplied with soft cloths for use of the pupils suffering from colds, then after being soiled have them collected in paper bags and burned. All children should be taught by example and precept, to always cover the mouth and nose when sneezing or coughing.

The following circular by C. Ward Crampton, M. D., distributed to the teachers of New York City schools is most commendable, and we recommend a similar one for teachers everywhere. Dr. Crampton says they have had most excellent results from its use; also that the usual spring epidemic of measles has very largely passed them by.

The circular reads as follows:

Principals should call the attention of all teachers to the following notice:

1. Scarlet fever, measles, diphtheria, influenza and common colds are often spread by coughing and sneezing. This occurs frequently before the child appears to be ill.

2. When a child coughs or sneezes, he is apt to expel into the air visible droplets or an invisible spray containing bacteria and other germs which cause the diseases above mentioned.

3. Children should be instructed as follows:

(a) Each child should be urged to provide himself with a clean handkerchief. They should be carried conveniently so that they are available for immediate use.

(b) Children should be instructed, when coughing or sneezing, to guard the mouth and nose with a handkerchief, so that none of the infectious material will be cast upon his associates throughout the room. The impulse to sneeze is often so sudden that this cannot be done. The child, therefore, should get into the habit, when he coughs or sneezes, of turning the head away from his neighbors and should guard the mouth and nose with the hand, but every effort should be made to make proper use of the handkerchief.

The most recent medical investigations have demonstrated beyond a doubt that the diseases mentioned above are transmitted by coughing and sneezing and that these precautions against infection will do much to eliminate them.

Very truly yours,

C. WARD CRAMPTON, M.D.,

Director of Physical Training.

Approved:

WILLIAM H. MAXWELL,

City Superintendent of Schools.

This work of prevention must be brought about largely by means of education—education of school officials by way of the daily press and of special literature mailed directly to them; education of parents by the press and parent-teachers' associations; education of teachers now in service by school literature and teachers' institutes; education of teachers in training by special courses of hygiene and sanitation in all high schools, colleges and normal schools. Such courses up to the present time, particularly in normal schools, have been conspicuous by their absence. According to the report of the National Bureau of Education, "In 1911 Questionnaire sent to 191 of the most important normal schools in this country, elicited returns from 84. Exactly one-half of the 83 heard from offered no hygiene courses aside from the hygiene given with physiology, or incidentally in courses on school management, methods of classes, psychology, etc. Nine schools have neither physiology nor hygiene; only one school attempts to train special teachers of hygiene."

Dr. Helen C. Putnam, in a study of forty normal schools, says: "Several courses were conspicuously poor, one or two surpassing anything I have chanced to find in public schools. Few were worth a journey to see good methods."

Until a proper course of hygiene and sanitation is added to the curriculum of normal schools, we cannot expect much help from teachers in the prevention of disease in general, much less of one so recently considered of importance and preventable.

When school officials, parents and teachers shall learn what an opportunity there is for saving life and health by preventing colds, may they one and all be ready to do their part in this much needed campaign.

To summarize:

1. Colds are of serious import, often directly causing the death of infants and the aged. They may also result in pneumonia, tuberculosis, and other serious diseases. They cause 90% of deafness, and most of the adenoids so prevalent among school children. They should receive prompt and persistent attention until cured.
2. Colds are contagious and preventable. School officials and teachers should do their part in the work of prevention.
3. Children with colds should be excluded from the schools. Until that becomes a rule other methods of prevention must be used. Every child should be taught healthful ways of living. The school room should be a model of cleanliness, temperature, and fresh air, the latter being abundant; the common cup, towel and pencil be abolished; and provision made for drying wet clothing.
4. Every school room should be systematically disinfected by town authorities once a month, and by teachers when colds prevail. Here lies the keynote of prevention.
5. All children should be taught to cover mouth and nose when sneezing, or coughing, and infected handkerchiefs be cared for.
6. Prevention of colds in public schools must be brought about by education of school officials and teachers.

LES INSTITUTEURS ET LA TUBERCULOSE

PAR

CHARLES ROSSIGNOL

Dans sa septième réunion annuelle, tenue à Amsterdam, Hollande, les 10-11-12 et 13 août 1912, le B. I. F. I. a entendu un rapport se son vice-président, M. Winnens, sur la question suivante: Au point de vue de la tuberculose, (a) quelles sont les mesures de préservation à prendre en faveur des instituteurs? (b) quels sont les moyens de guérison?

L'assemblée vota, à l'unanimité, la plupart des conclusions, et comme elles pouvaient se classer sous deux rubriques: (a) mesures d'ordre scientifique, (b) mesures d'ordre administratif, un membre proposa de soumettre la première au jugement du Quatrième Congrès International d'Hygiène scolaire qui doit se tenir à Buffalo en 1913. La proposition fut admise à l'unanimité et le comité exécutif du B. I. F. I. fut chargé de faire le nécessaire pour amener la savante assemblée de Buffalo à se prononcer sur l'angoissante question de la tuberculose des instituteurs.

En vous présentant les conclusions de l'assemblée d'Amsterdam, nous avons donc l'honneur de vous prier de donner à ces propositions l'estampille scientifique qu'un congrès de médecins, d'hygiénistes, de savants, a seul autorité pour ce faire.

Ce que nous sollicitons, en définitive, de votre haute bienveillance, c'est un examen de nos propositions. Cet examen amènera des corrections, des compléments, des précisions qu'un corps d'instituteurs ne peut formuler, mais qu'une savante assemblée comme la vôtre peut présenter avec autorité.

Au nom des 411,000 membres du Bureau International de Fédérations d'instituteurs, nous recevrons avec reconnaissance les résultats de votre examen, et forts de l'autorité qui s'attache à une assemblée aussi considérable que la vôtre, nous pourrons, par notre action directe, par la presse, et par l'enseignement, arriver à persuader les administrations et les pouvoirs publics de la nécessité de tenir compte des prescriptions et des directions approuvées par la Quatrième Congrès International d'Hygiène scolaire.

Propositions votées par l'assemblée tenue à Amsterdam en 1912:

(1) Faire subir au candidat instituteur, avant son admission à l'école normale, un examen médical sérieux et méticuleux.

(2) Faire subir un examen de même nature aux candidats non normaliens avant l'entrée en fonctions comme instituteurs.

(3) Les salles de classes, dans toutes les écoles indistinctement, doivent répondre à toutes les exigences hygiéniques: superficie et volume d'air par élève, exposition, éclairage, et ventilation. Il conviendrait que le congrès voulût bien entrer dans quelques précisions à propos de la proposition 3.

(4) Les locaux scolaires et leurs dépendances seront toujours dans un état de bon entretien.

(5) La désinfection des locaux sera pratiquée annuellement et chaque fois qu'un cas de maladie contagieuse aura été constaté dans l'école.

(6) L'inspection scolaire médicale sera organisée sérieusement.

(7) Ne pas admettre plus de trente élèves dans chaque classe.

(8) Envoyer à la visite médicale tout élève dont la santé paraît inspirer quelque crainte.

(9) A l'école et autour de l'école, propager toutes les mesures prophylactiques de la tuberculose.

(10) Organiser des consultations gratuites pour les élèves suspects de tuberculose.

Le présent rapport est confié aux soins obligeants de Mme. Fannie Fern Andrews, de Boston, membre correspondant de B. I. F. I. Nous la prions de bien vouloir le faire parvenir au Comité du Congrès International d'Hygiène scolaire, de Buffalo, et de faire le nécessaire pour assurer un examen des propositions du B. I. F. I.

THE OCCURRENCE OF SPINAL CURVATURE AMONG SCHOOL CHILDREN

BY

JAMES WARREN SEVER

I wish to speak to you to-day on the relation of the occurrence of lateral curvature and round shoulders, beside other bad or faulty antero-posterior positions, to the school life of children, together with certain conditions which may increase these abnormal postures.

You may not realize that at present about twenty per cent. of the total population of the United States spend from three to five hours a day in school, and that this percentage is likely to be higher than lower with the increase in the extensions of the public school system. The responsibility therefore of the proper care and supervision of this enormous number of children is great. The total number of persons of school age, that is, from six to twenty years inclusive, in continental United States in 1910, as shown by the United States census of that year, was 27,750,599, of whom 17,300,202, or 62.3 per cent., attended school. The period of maximum school attendance is from ten to fourteen years. For these years a comparison may be made with the census of 1900. In 1900 79.8 per cent. of the children attended school, compared with 88.2 per cent. in 1910, showing an increase of almost ten per cent. In the group of six to fourteen years inclusive, the most common years of school attendance, there was a total of 16,832,374 persons reported in 1910, and of this number 13,706,980, or 81.4 per cent., attended school.

School life is to a certain extent an artificial one, and the child who enters the ordinary school undergoes a physical as well as a psychical depression. The normal development of the growing child depends considerably on his muscular activity, which school room discipline naturally tends to check. This in turn develops muscular fatigue, which results in bad posture, nervous strain and exhaustion.

School deformities are usually due to, or if present, increased by prolonged sitting in faulty positions, combined with too little muscular activity. It is thought by many observers, however, that faulty postures alone are not enough to cause marked structural deformities, but given conditions in the child which imply lack of bone or muscle resistance, the deformity—more or less severe—may develop.

The common type of school deformity is not a severe structural scoliosis, but generally a so-called functional or false scoliosis, generally convex to the left. Variations in the antero-posterior plane are also

very common. (See Figs. 1 and 2.) Carrying many books home for study has been suggested as a cause for lateral curvature tendencies, for it has been stated that in New York the grammar school children habitually carry five pounds of books to and from school. This weight carried daily in one hand, or over one shoulder, exerts a distinct tendency to deformation.

The schools are, however, probably less to blame for the occurrence of structural lateral curvature than is generally believed. Even with the most complete development of school hygiene, lateral curvature will not altogether disappear in school children, for the tendencies are probably implanted before the school life begins. It has been shown that twenty-five per cent. of the school children in Germany, for example, hold themselves crooked.

In the absence of direct pathological causes, it is believed that the chief factor in the production of faulty postures is fatigue of the back muscles, resulting in the assumption of a position which, taken originally to relieve strain, becomes habitual and finally, owing to structural changes, permanent. Such fatigue usually results from prolonged standing and sitting rather than from active exercises. The fact that in all cases subjected to these same conditions of strain curvatures do not develop shows that individual predisposition also plays a part. Other conditions may cause bad postures, such as unequal hearing, which causes tilting of the head habitually to one side, as will also poor or unequal vision (2.)

Writing Positions and Methods. The bad posture taken in using the slanting hand writing at a school desk has been urged as a factor in the production of scoliosis in school children, and for that reason the vertical system was introduced several years ago. This system, in spite of some favorable statistics, has not proved wholly efficient. The fact that a child when sitting properly and using the vertical system has its hand directly in the line of vision of the pen point causes it to bend the head or body to one side, and so tends to produce a bend and twist in the spine. There has been an attempt made to overcome this difficulty by using a penholder in which the pen is set off to one side of the line of the holder but this has not proved an adequate solution.

The statistics in favor of the vertical system are as follows, and are the result of separate investigations in the different cities:

	Slanting Writing	Vertical Writing
Nuremburg.....	24%	15%
Zurich.....	32%	12%
Munich.....	24%	15%
Fürth.....	65%	31%
Wenzburg.....	28%	8%

The figures represent the percentage of the occurrence of lateral curvature under the two methods employed.

In writing, the position should be a good one, that is, with the back straight and the shoulders even and the child directly facing the desk. The child should sit squarely in the seat, with the whole forearm resting on the desk, the elbow near the lower right hand corner. Figs. 3 and 4 give a good idea of a fair position, with the relations of the arms, pen and paper to the desk top.

Physical Education and Hygiene. School children should not be required to remain sitting for long periods, and while sitting the back should be supported in such a way as to relieve the muscles from undue strain and stretching forces. It is therefore obvious that the first aim of any adequate prophylactic treatment is to secure rest of the muscles. This may be done by frequent exercise periods of short duration, and by correct seating, as obtained by the proper relation of the desk and chair to the individual, combined with adequate support to the back in a normal sitting position. An exercise period of three to five minutes at the end of each hour, or even at the end of every two hours, may be enough to counteract deleterious effects of the school desk and chair and of too long rest in a bad posture. Improper attitudes invariably result from fatigue, and that fatigue must always follow any attitude which is maintained without change for any length of time is obvious.

School departments in all the various cities of this country are alive to the necessity of the establishment of departments of physical education and school hygiene, combined properly with the development of athletics in the schools. Many such departments are now established under the charge of a competent instructor for both girls and boys, who in addition to conducting routine setting up drills, is also on the lookout for postural or structural deformities of the spine.

The work done in Oakland, California, by the Department of Physical Culture under the charge of G. H. Pfund, is very interesting and suggestive. I will abstract briefly from Mr. Pfund's report, as follows:

Department of Physical Culture.

The aim of this Department is three-fold:

I. Improvement of the functional activity of the body, especially the functions of the lungs and heart.

Breathing Exercises.

II. Prevention and correction of tendencies to abnormal development, especially those resulting from "sedentary attitude during school life."

Orthopedic Exercises.

III. Development of the body into a harmonious whole, under perfect control of the will. It is not to produce great bulk of muscles, but to cause those already present to respond readily to volition.

He presents figures covering a period of four years' breathing exercises in an average of 6,000 grammar school pupils, showing a steady increase in chest expansion from the fifth to the eighth grades, which increase averages 2.28 inches, or an increase of ninety per cent. breathing power.

Standard Chest Expansion.

The standard chest expansion of all grammar grades combined was 2.87 inches in February, 1908, and reached 4.48 inches in December, 1911, which is an increase of 56 per cent. in a four years' period.

Work Toward Erect Postures.

Children, on account of hereditary tendencies, general weakness, rapid growth, malnutrition, poverty of blood, scrofula, or other protracted illness, may be particularly inclined to spinal troubles.

The most common trouble among children was the "kyphotic back," or posterior curvature of the spine, with the corresponding depression of the chest wall.

So much has this condition been, and is still being neglected in most of the schools of this country, that we have come to believe that a stoop back is physiologically normal.

The first conditions mentioned in connection with bending over the desks while writing, drawing, reading, etc., may produce a posterior curvature of the spine (kyphosis), and if the body is allowed to twist in the seat at the same time, a lateral curvature of the spine (scoliosis) may result in time.

In order to ascertain and to prove such faulty postures in the children at the desks while performing written work, the physical director has taken a number of photographs, the children being entirely unaware of it. When ready the pictures are to be used for lectures for the teachers and pupils.

Examination of Postures.

The nature of the postures in the photographs thus obtained showed the necessity of some action. The physical director thereupon made an examination of postures of all the children (14,000) in the school department. The records of each child individually, as well as of the class collectively, are kept by the teacher, who is instructed especially to watch and to help the stooping ones.

In order to increase the "sense of being" and of keeping straight, several outlines of back and chest of the physiologically best looking pupils were drawn on the black-board, and afterward the outlines of the most stooped ones, as a contrast.

These comparative outlines seemed to have a very strong impression upon the children's minds.

Comparing the figures of the fall and spring examinations of postures, the director noticed that in a general way the number of physiologically normal children increased from the first to the fourth grades (primary), and decreased from the fifth to the eighth grades (grammar). He accounted for this decrease by comparing the amount of written work at the desks prescribed for the primary and grammar grades.

Again, these figures become interesting if he compared the grades where no written work is done on the desks with the ones where such work begins.

Recommendations.

1. He believes we ought to insist upon erect and correct postures while doing written work.

2. He recommends that ten to fifteen minutes of physical culture be allowed on the daily programme of the grammar grades.

3. That open air gymnasiums be erected on all new and old school grounds.
4. That swimming tanks be constructed for the use of the schools, so that swimming instruction may be given.

Frequency of the Occurrence of Scoliosis. The frequency of scoliosis in school children increases with the age of the child and the class, but that constancy of progression is not always found, and their susceptibility to compound or structural curves increases also with their age. There is a rapid increase between the ages of eight and thirteen years and especially between the ages of eight and eleven—a period usually of rapid growth, which period also corresponds to the highest percentage of school attendance for persons of school age. (See United States Census Report, 1910.)

Kirsch(3), of Magdeburg, examined 1,000 school children for evidences of lateral curvature; 500 children were examined at the time of entrance to school and also at the end of their school life.

Of the girls, 21.9 per cent. had scoliosis at the beginning; 41.1 per cent. had scoliosis at the end.

Of the boys, 19.0 per cent. had scoliosis at the beginning; 21.4 per cent. showed evidences at the end.

Of the girls, 7.4 per cent. had fixed or structural scoliosis.

Of the boys, 7.2 per cent. showed a similar condition.

Gronberg(4), Germany, reported his observations on 8,053 school children. He found that 48.1 per cent. showed evidences of bad attitudes and deformities. This frequency is obviously very high.

Dukes(5), reports 445 cases of lateral curvature out of 1,000 boys examined, giving a percentage of 44.5, with 126 cases of acquired pigeon breast.

Scholder(6), examined 2,314 school children, and found 571, or 24.67 per cent. scoliotic, frequency equally divided between the two sexes. The great majority of these 571 cases had a left curve. He believes this tendency to a left sided lateral curvature is alone a sufficient argument that school is a determining factor in the causation of scoliosis, for such a lateral curvature corresponds to the faulty attitude taken by the child when writing. He also shows by statistics that the children who have been the longest in school have the greatest percentage of postural deformity. He compares his figures with those of other observers in other places as follows:

	School Children	Scoliosis	Percentage
Guillamne, Neuchatel.....	731	218	29.00
Krug, Dresden.....	1,418	357	25.00
Hagmann, Moscow.....	1,664 (girls)		29.00
Kallbach, Petersburg.....	2,333 (girls)		26.00
Scholder, Lausanne.....	2,314	571	23.67

Silfverskiöld(7), of Stockholm, has had occasion to examine 3,234 girls in Gothenburg schools, and found scoliosis present in 416, that is, 12.8 per cent. He states that the largest proportion of cases occurred in apparently robust girls of fifteen and sixteen years of age. A great number of children showed asymmetry of growth, such as short legs, etc.

Tait McKenzie(8), in New York, states that out of 122 school children examined, 32 cases, or 19 per cent., had scoliosis, that out of 446 athletic college students 19 per cent. had lateral curvature, and in another series of 200 college students it was well marked in over eight per cent., and slight in an additional 16 per cent. In a girls' high school, out of 160 examinations it was found present in 31 cases, or 19 per cent.

The average of all observers shows about 27 per cent. of occurrence, with the period of greatest frequency between the ages of seven and fourteen years. From an analysis of 9,485 school children examined by different and competent observers in different parts of Europe, there were from 25 to 30 per cent. affected with lateral curvature. It may be said that the frequency of scoliosis occurring in girls of the school age varies from 10 to 23 per cent., and in boys from 16.4 to 26 per cent.

Haglund's(9) studies showed an increase with the school age as follows:

Average about 27 per cent.									
Age.....	6	7	8	9	10	11	12	13	14
Percentage of scoliosis.....	..	11	13	18	16	18	24	22	22
Number of cases	1,599								
Cases of scoliosis.....	283								

From this brief review of some of the statistics you may note that lateral curvature is a real problem to be met in the school child.

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(9) Haglund: Zeitsch. f. orth. Chir., XXVI, 649.



FIGURE 1

Showing typical case of left total scoliosis; physiological curve.

(10) Thomas Wood: The Desk; 2d Int. Congress Sch. Hygiene, Vol. I.

(11) F. J. Cotton: Annual Report of the School House Commission, Boston, 1903-1904.



FIGURE 2

Showing antero-posterior position of same child as that shown in Fig. 1.
Note round hollow back, with forward shoulders.

These diagrams are intended to show clearly the position of the writing paper on the desk, the relative positions of arms, paper, and desk, and the direction in which the pen moves to secure uniform slant. Fig. 3 is the half side position mostly used in public schools and best adapted to them, because of the character of the desks. Fig. 4 is the square front position.

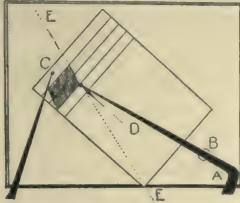


FIGURE 3

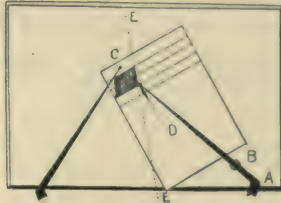


FIGURE 4

In both diagrams, *A* represents the square turn at the right elbow and its position on the desk, *B* is the muscular rest of the forearm, *C* the position of the left hand in its relation to the paper and the right hand, *D* the penholder, and *E E* the imaginary line between the eyes along which the pen should travel in upward and downward strokes.

With the right forearm crossing the lower edge of the paper a little to the right of the center, the pen should progress one-fourth or one-third of the distance across a sheet of paper eight inches wide, before the position of the paper is changed. Always use the left hand to move the paper. Paper of this width should be shifted two or three times, and when the end of the line has been reached, the paper should be returned to its original position. Lift the pen before moving the paper.

SCHOOL DESKS AND CHAIRS AND THEIR RELATION TO THE OCCURRENCE OF SCOLIOSIS IN SCHOOL CHILDREN, WITH ESPECIAL CONSIDERATION OF THE FURNITURE USED IN THE SCHOOLS OF THE UNITED STATES

BY

JAMES WARREN SEVER

School Furniture. The question of school furniture has been before the public for some seventy years, having originated with Barnard in 1842, and about 150 models of desks and chairs have been advocated.

At present a great number of American school children are sitting in chairs which give no, or inadequate, support to the back in any attitude they may assume, and at desks which are not adjusted either to the proper height or at a proper distance (plus or minus) in relation to the child's needs. To be sure, many cities are using adjustable furniture; and in one state, Indiana, 20% of all new installation is required by law to be adjustable. It is a fact, however, that in many schools, benches with and without backs, kitchen chairs, and single and double settee seats are found in common use, much to the detriment of the pupil's proper physical development.

Adjustable furniture is rarely used altogether in all schools, many departments being content (where any is used) to limit their equipment of this type to a percentage of 25 or even 15. Many schoolrooms have but one row of eight desks and chairs of the adjustable type.

It is also true that no matter how much adjustable furniture is installed, it is no better than the old chairs or benches unless it is adjusted. That is, each pupil should be fitted to the seat and desk in a proper relation.

The reasons for adjustable furniture, provided it is adjusted, may be seen from the following statements: Conditions have been noted where children differing seven years in age and twenty-two inches in height have been found sitting in similar seats and at similarly arranged desks. These conditions, I venture to say, could be duplicated in many school-houses in this country where no opportunity exists to adapt the individual pupil's size to the desk and chair in their proper relations; either the desk is too high and the chair too low, or vice versa. The desk may also be too far away from the seat—a too great plus distance; or too near

—a too great minus distance; causing undue stretching of the back muscles in the first instance, and a cramped position in the second.

Thomas Wood(10) states that all seats and desks should be adjustable and adjusted. He gives figures on 25,000 boys and girls showing that the amount of variation in height at the same ages has been 11.35 inches.

Proper Relations of Seat and Desk to Pupil. School desks should leave room enough for the knees, and should be low enough so that the elbow and forearm may rest comfortably on it without bending the back. The slope of the desk theoretically should be about 30 degrees; but as that is too steep an angle to allow books and papers to rest on it without sliding off, a compromise angle of from 12 to 15 degrees has been selected. The seat should be no wider than the width of the hip, for wider seats predispose to slouchy attitudes. It should be about two-thirds the length of the thigh. It may or may not slope very slightly backward, but this is of no great importance. Any great slope is distinctly bad. The height from the floor should be such as to allow the feet to rest equally and comfortably on the floor. A seat of too great breadth, as well as one of too great depth, compels bad postures. The seat should have a back which supports the lumbar spine when sitting at work as well as at rest.

For standard use, the front edge of the seat should be about one inch behind the front edge of the desk—a so-called plus distance of one inch. The back of the chair should be either straight up and down or sloping very slightly backward, and should support the spine in the lumbar region. The lower edge of the support should come about one inch above the hip bones. Any support above the hollow of the back is superfluous, and often of distinct disadvantage in that it offers a support for the common slouching attitudes seen in children when sitting on the forward edge of the seat, the spine bowing backward between the lower end and the top of the shoulder blades. (See cuts Nos. 5 and 6.)

The back should give plenty of clear room at its lower portion for the buttocks and clothes; otherwise, the child will be cramped and pushed forward in the chair.

The essential features in adjustable school furniture are as follows:

1. Adjustment for height, vertically, of chairs.
2. Adjustment for height, vertically, of desks.
3. A back rest of proper inclination, with adequate support for the lower back.
4. A proper depth of seat.
5. A proper slope of seat.
6. An adjustment of desk or chair for plus or minus distances.

Arrangement of seat to desk. (See cut No. 7.)

No. i. = Plus distance.

No. ii. = Minus distance.

No. iii. = No or zero distance.

(11) Quoting from Dr. Cotton's report to the Boston Board of School House Commissioners, he states the following salient points:

"We have long known how undesirable long continued flexion of the back is in regard to producing scoliosis as well as kyphosis. Certainly one of the most important things to avoid in seating children is the tendency to flexed and twisted positions. For a considerable part of their time at least, we want them near the balanced sitting position. * * * Now if we are to work against flexed positions, we must maintain the lumbar curve. This means support to the lower lumbar spine. The straight chair back cannot give this; and considering the varying anatomical curves, and, even more, the variation in the size of the buttocks and the bulk of the clothes, no fixed long curve can be devised to give such support in all or even most individuals. We must have direct support applied where we most need it. With the lumbar curve supported, the chair back need go but little higher to give full comfort in the proper sitting position; and below this lumbar region, no support can be of any use. The top of the back need come no higher than the top of the desk edge."

Dr. Cotton devised an excellent adjustable seat and back (see cuts Nos. 8 and 19), which is extensively used; but I have been told that on account of the slight increased expense in its manufacture, chair manufacturers are disinclined to bid on it or school departments to call for its installation.

In order to learn what types of school furniture were being used in the cities of the United States, I addressed an inquiry to the School Departments of all cities over 25,000 inhabitants as shown by the United States Census of 1910, asking for information as to their school furniture and the total enrollment of pupils. Some gave me the information I wanted; some sent me lots of information I did not want and none that I did; and many I had no replies from. In all, I had replies from about 38% of the 230 odd School Departments I addressed. This information I have tabulated and it may be studied in the following table. (See Table No. I.)

TABLE NO. I

	Total Population 1910	School Children	Types of Desks	Adjustable
Altoona, Pa.	52,127	9,000	$\frac{3}{4}$ single; $\frac{1}{4}$ double.	No note.
Aurora, Ill.	29,807	6,200	No uniformity; all kinds.	"All that have been put in in last 15 years have been adjustable."
Albany, N. Y.	100,253	17,583	No note.	No information supplied.

Table No. I—Continued

	Total Population	School Children	Types of Desks	Adjustable
Allentown, Pa.	51,913	7,500	American auto- matic.	See cut. Fig. 12.
Brockton, Mass.	56,878	8,063	Adjustable.	No information as to type.
Brookline, Mass.	27,792	4,298	$\frac{1}{8}$ adjustable.	No other information sup- plied.
Baltimore, Md.	558,485	66,659	Some double and some single.	"Adjustable desks no longer purchased."
Bayonne, N. J.	55,545			No information supplied.
Berkeley, Cal.	40,434	6,500	Solid single desk; 5 sizes; adjustable and non-adjust- able.	18 adjustable and 27 non- adjustable in each room.
Bridgeport, Conn.	102,054	14,559	Am. Seating Co.	Stationary desks. See cut. Figs. 13-14.
Binghamton, N. Y.	48,443	7,600	Am. Seating Co.	Stationary. See cuts 13-14.
Cincinnati, Ohio	364,463		Adjustable desk and seat. Seat detached from desk. Seat of set- tee form, not chair	Various styles.
Council Bluffs, Iowa.	29,292		Regular standard	Probably Chandler or Hay- wood type.
Colorado Springs, Col.	29,078	5,400	Am. Seating Co.'s Nos. 1, 2, 3, 4 and 5.	No other information sup- plied. See cut. Probably Chandler adjustable.
Chicago, Ill.	2,185,283	343,354	Am. Seating Co.	Most of school furniture made by our Repair Dept.
Columbia, S. C.	26,319	4,000	2 or 3 sizes to a room.	Have never used adjust- able desks in our schools.
Cleveland, Ohio.	560,663	74,233	Installing adjustable seats and desks of our own pattern since 1906. See cuts Nos. 10-11.	
Columbus, Ohio.	181,548	25,207	25% adjustable sufficient.	Last two rows in each room so arranged.
Danville, Ill.	27,871	3,004	Single open desks with hinge seats. Graded to suit size of child.	Evidently non-adjustable.
Decatur, Ill.	31,140	6,500	Columbia-Ameri- can Seat Co.	$\frac{1}{8}$ adjustable in each room. Probably similar to usual settee desk as used in Co- lumbus and Bridgeport.
Davenport, Iowa.	43,028	8,000	Ordinary school desks, 2 or 3 sizes.	High Schools, Columbia chair, Am. Seating Co. 1 school, Sanitary Steel Ped- estal Desk, Am. Seating Co. See cut 15.

Table No. I—Continued

	Total Population 1910	School Children	Types of Desks	Adjustable
Des Moines, Iowa.	86,368	16,000	+ No adjustable seats.	
Detroit, Mich.	465,766	81,927	Rubber tipped tables with chairs to suit each individual will soon replace desks and chairs. A prophecy. No other information supplied.	
Denver, Colo.	213,381		No uniform seating plan. Many of rooms have one row of adjustable seats, feeling that 8 adjustable seats will accommodate all the "unusual children."	
Elizabeth, N. J.	73,409	10,829	Single adjustable desks largely. New Jersey School Church Furniture Co.	
East Orange, N. J.	34,371	6,000	Regular stock school furniture—adjustable. Different manufacturers: Am. School Seating; Haywood Bros.; Kenney Bros. & Wolkins. See cuts.	
Elgin, Ill.	25,976		No information supplied.	
East St. Louis, Ill.	58,547	8,090	Ordinary school desk.	Some adjustable and some non-adjustable.
Fitchburg, Mass.	37,826	6,778	Chandler or similar desk and seat. See cut No. 17.	
Flint, Mich.	38,550		Cleveland Seating Co. Superior Seating Co.	See cut No. 11.
Jamestown, N. Y.	31,297		Solid desk and seat regulation.	Some adjustable.
Jersey City, N. J.	267,779	34,006	Dividing line desks.	Each room 1 row of adjustable desks. High School adjustable desks and lecture chairs.
Johnstown, Pa.	55,482	7,986	No definite information supplied.	
Kansas City, Mo.	248,381	73,750	No further information supplied.	
Kalamazoo, Mich.	39,437	6,352	Most of desks and chairs of old rigid type; few adjustable. See cut No. 12.	
Louisville, Ky.	223,928		Rapidly displacing old-fashioned double desk with modern type of single desk.	
Lynn, Mass.	89,336	11,500	Equipping all new buildings with adjustable desks and chairs. K. Bros. & W. See cut No. 17.	
Lawrence, Mass.	85,892	11,500	About 2,500 seats and desks in public schools adjustable. Chandler desks and chairs. See cut No. 17.	
Lowell, Mass.	106,294	12,700	Seats are $\frac{1}{2}$ doz. kinds; furniture obtained in recent years is adjustable; old is not. Adjustable is better, but not to greatly superior, as has been claimed.	

Table No. I—Continued

	Total Population	School Children	Types of Desks	Adjustable
Muskogee, Okla.	25,278		Adjustable from the Am. Seating Co. Probably similar to Chandler type.	
Madison, Wis.	25,531	3,993	Ideal Desk, Am. Seating Co.	Probably like Chandler type. Purchase nothing now but adjustable desks and chairs. In some school still use old single stationary desk and chair.
Malden, Mass.	44,404	7,000	Am. Seating Co. "Boston type."	Adjustable. See cut No. 19.
Manchester, N. H.	70,063	5,966	All adjustable. Am. Seating Co. and Kenney Bros. & Wolkins.	Chandler type best. See cut No. 17.
Meriden, Conn.	27,265	4,377	Non-adjustable being replaced by adjustable. Kenney Bros. & Wolkins.	See cut No. 16.
Montgomery, Ala.	38,136	4,500	Schools to a great extent furnished with individual adjustable desks and seats. Types: Chandler, Ideal, and Automatic Triumph Single Desk. See cuts.	
McKeesport, Pa.	42,694		No information supplied.	
Nashua, N. H.	26,005		Haywood adjustable. See cut No. 17.	
Niagara Falls, N. Y.	30,445	4,502	Many adjustable every room. Paragon Desk, Am. Seating Co.	
New Bedford, Mass.	96,652	11,820	Chandler and Kenney Bros. & Wolkins.	Adjustable.
Nashville, Tenn.	110,364		Am. Seating Co. Probably adjustable.	No other information supplied.
New Britain, Conn.	43,916	7,000	Adjustable. Chandler and Haywood.	
Newton, Mass.	39,806	6,906	All modern buildings and nearly all the older buildings equipped with Chandler adjustable desks and chairs.	
Newark, N. J.	347,469		Some stationary desks and chairs. Standard single combination desk and seat. Some adjustable made by Am. Seating Co. and New Jersey School-Church Furniture Co. See cut. $\frac{1}{4}$ of quantity of desks to a schoolroom are adjustable.	
New Rochelle, N. Y.	28,867		Adjustable desks and chairs. Kenney Bros. & Wolkins. See cut No. 17.	
New Haven, Conn.	133,605	23,152	Schoolhouses furnished mainly with combination seat and desk by Buffalo School Furniture Co. (Am. Seating Co.) See cut No. 12. In nearly every room there is one row of adjustable seats and desks.	

Table No. I—Continued

	Total Population 1910	School Children	Types of Desks	Adjustable
Oakland, Cal.	150,174	22,500	Am. Seating Co., Triumph Type.	Chandler regular and Boston School Desk. All adjustable. See cuts 12 & 17.
Perth Amboy, N. J.	32,121	6,000	Adjustable and non-adjustable.	State that they desire the non-adjustable.
Passaic, N. J.	54,773	12,000	Most of the desks in use are the N. J. School-Church Co.'s. In each room about $\frac{1}{3}$ are adjustable; one new bldg., all adjustable. (Kenney Bros. & Wolkins.)	
Pasadena, Cal.	30,291	5,722	Few adjustable but most rooms furnished with ordinary desks and chairs. Tables and chairs (kitchen) in special study rooms.	
Pueblo, Col.	44,395	9,000	Only Grand Rapids desks in entire city (Probably like Triumph Type.) See Figs. Nos. 13-14.	
Portland, Ore.	207,214	30,000	Triumph desks.	Each schoolroom is furnished partly with non-adjustable and partly with adjustable desks. See cuts Nos. 13-14.
Philadelphia, Pa.	1,549,008	192,000	In all elementary schools conventional type of desk. One or two rows of adjustable desks are placed in each room, and one or two rows of fixed but different sized desks in each room.	
Providence, R. I.	224,326	30,000	Most schoolrooms are seated with adjustable desks or have a number of rows of adjustable desks; gradually replacing stationary with adjustable types.	
Rochester, N. Y.	218,149		No information obtained.	
Roanoke, Va.	34,874		Have a large number of double desks. Believes that flat-topped tables with ordinary chairs most restful and sanitary than the patent desk. Tried them for a year.	
Rockford, Ill.	45,401	7,885	Just begun to use adjustable desks. Am. Seating Co.'s Steel Pedestal and Steel Automatic. Have about 500. See cuts 12 and 15.	
Richmond, Va.	127,628	18,741	Schools with exception of two rooms are equipped with regular school desks and chairs. Have some double desks. Newer buildings are equipped with adjustable desks and chairs.	
Somerville, Mass.	77,236	11,871	Adjustable desks in nearly all the buildings.	
Syracuse, N. Y.	137,249		Chairs and desks purchased from State Prison Commission. "Most unsatisfactory."	
Schenectady, N. Y.	72,826		90% of elementary schools equipped with adjustable furniture. 3 types: 1. Bench seat with up and down adjustment; 2. Bench seat with plus and minus adjustment; 3. The chair seat with 4 adjustments. (Boston seat.)	

Table No. I—Continued

	Total Population	School Children	Types of Desks	Adjustable
South Bend, Ind.	53,684	8,070	Regular desks by Am. Seating and Grand Rapids Furniture Co.	Very few adjustable seats in graded schools.
South Omaha, Neb.	26,259	5,000	Ordinary school desks.	Convinced of need of adjustable desks and seats but have none.
St. Paul, Minn.	214,744	38,905	Attempt to adjust chair and desk to pupil. Only one row of adjustable desks to a room; remainder are stationary, furnished by Cleveland Seating Co.	
San Antonio, Texas.	96,614	19,769	Desks of various patterns and makes. Replacing some with steel desks with straight backs and seats.	
Seattle, Wash.	237,194	30,000 +	$\frac{1}{2}$ seats adjustable to a room. Use Triumph Desk. See cuts 13 and 14.	
San Francisco, Cal.	416,912	43,979	No other information obtained.	
Spokane, Wash.	104,402	17,022	Triumph Desk.	
St. Louis, Mo.	687,029	84,073	15,000 using adjustable seat and desk as shown in blueprint cut supplied. Similar to desk and chair shown in cuts 13 and 14.	
Terre Haute, Ind.	58,157		State Law requires 20% of all new installations shall be adjustable. Use ordinary rigid, one-pupil desk and same in adjustable. No chairs except in Kindergarten.	
Tacoma, Wash.	83,743	13,984	Use "Wabash," "Triumph," "Automatic," Andrews.	
Topeka, Kan.	43,684	7,677	Adjustable desk and chair. Similar to Triumph.	See cuts 13 and 14.
Waltham, Mass.	27,834	5,000	Ordinary chair and desk. Kenney Bros. & Wolkins; Am. Seating Co. Not all adjustable.	
Waterbury, Conn.	73,141	12,895	For past 15 years purchased nothing but adjustable furniture. Still have some non-adjustable. Chandler desks and Kinney Bros. & Wolkins' furniture.	
Worcester, Mass.	145,986	23,070	Am. Seating Co. Several types.	No information relative to % of adjustable or non-adjustable.
Washington, D. C.	331,069	60,384	Only adjustable desks and chairs; single. Bobrick schoolroom furniture by Am. Seating Co., N. J. School-Church Co., Kenney Bros. & Wolkins.	
Watertown, N. Y.	26,730	5,000	Chandler adjustable for past 10 years. Some non-adjustable. See cut 17.	
York, Pa.	47,750	7,000	Single adjustable in High School. No adjustable desks in Grade Schools. Some single and some double.	

The table shows the following points of interest:

1. The almost total uniformity of the cities towards the installation of adjustable furniture.
2. The use of the single desk and chair, and the abolition of the old double desks with settees and benches.
3. The large number of cities and schools content with but a small percentage of their total equipment adjustable.
4. The uniformity of the two types of adjustable furniture, namely: (A) The separate chair and desk; (B) The automatic with settee seat.
5. The inadequacy of the first type (No. 4, A) of chair back, and the absolutely faulty design of No. 4 (B) which cannot help but cause bad attitudes, and which must be anything but comfortable. The seats slope too deeply backward, and the backs vary considerably besides giving support in the wrong places.



FIGURE 12

In order that the reader may become familiar with some of the common types of school furniture in use, I will show the cuts of the different types, and give their names, and good and bad characteristics.

The Sebring Chair (See cut No. 9). A chair recently devised by Miss Emma G. Sebring, principal of St. Agatha's School, New York City. Designed for the purpose of at least inviting or encouraging, if not compelling, a correct sitting posture. It is maintained that the only comfortable position in this chair is the correct sitting position, and that when this position is taken the chair is perfectly comfortable.

Comment. This is not a bad chair. There are several things about it, however, that could be improved, namely: The seat appears to be too wide; the lack of a fixed distance from the desk; it would be better to have it fixed to the floor on a single standard at the proper relations to the pupil and desk, for any movable chair, no matter how good in itself, predisposes to faulty attitudes, due to its movability; the arrow-ness of the back and the straight lower cross piece, which should be curved forward.

Adjustable Seats and Desks. There are practically two types of adjustable seats and desks on the market to-day which are generally used. These are:

1. The so-called automatic desk and chair on a single frame or pedestal, with both chair and desk adjustable, or only the chair adjustable.
2. The separate single desk and chair, both adjustable to height but not to distance.

Of Type 1, the desk and chair as used by the Cleveland (Ohio) schools is about the best. Of Type 2, the so-called Chandler seat and desk is the most commonly used. Neither, however, is satisfactory or perfect.



FIGURE 10

Desk adjustable for height only.

Chair adjustable for height and distance, but seat and back too big. No room for hips or clothes. Curves of back constant. Generally too big and clumsy and likely to fit a child poorly.



FIGURE 11

(See Figs.
Nos. 10 and 11,
Cleveland Chair
and Desk.)

Fig. 12 is the type used in Columbus, Ohio; Richmond, Virginia; Kalamazoo, Michigan; Topeka, Kansas; St. Louis, Missouri; Allentown, Pennsylvania; Rockford, Illinois. The objections generally are the same as to Figs. 10 and 11: too great backward slope to seat and chair back. In St. Louis the chair back is flat and slopes backward slightly with a good chair seat, all however fixed on a single pedestal and non-adjustable except in various sizes.

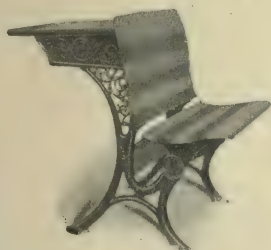


FIGURE 13

Figs. 13 and 14 show another style of Type 1, with the same general objections. The list of cities where it is used is appended.



FIGURE 14

There is one other class which is not used to any great extent, namely: the single pedestal desk, such as is used in St. Louis and developed or invented there by the School Department. It resembles strongly the same desk and chair as sold by the American School Furniture Co., except that in the St. Louis type the chair back is solid and flat. It is, however, not altogether satisfactory in view of the fact that no part of it is adjustable and so has to be installed in various sizes. (See Fig. 15.)



FIGURE 15

Another type of the single pedestal desk may be seen in Fig. 16.

One of the most popular and common styles of Type 2 is the so-called Chandler desk and chair, both adjustable to height but not distance. The desk is a good one, as is also the chair seat. The chair back, however, is bad in that it is too high and offers no support to the back where it is needed; neither is there room enough left for the buttocks. If the chair were adjusted to the proper height for the pupil, and set at a uniform plus distance of about one inch, the combination would not be a bad one except for the chair back. (See Fig. 17.)



FIGURE 16



FIGURE 17

Other desks and chairs of very similar styles are used in many cities, as follows:

Colorado Springs, Col.,
 Fitchburg, Mass.,
 Lawrence, Mass.,
 Manchester, N. H.,
 Montgomery, Ala.,
 New Britain, Conn.,
 Newton, Mass.,
 Watertown, N. Y.,
 Nashua, N. H.,
 Lynn, Mass.,
 New Rochelle, N. Y.

There is a recording gauge supplied by some manufacturers, so that the teacher or janitor may measure the pupils as they sit at the desks and so acquire data by which the desk and chair may subsequently be properly adjusted to each child. It is simple and readily used.



FIGURE 18

Fig. 18 represents a school chair, the seat of which is all right, but the back is bad beyond all conception. Why backs are made to slope and curve so, only the manufacturers can tell. It can't be from any adequate knowledge of the normal curves of the spine nor the pupils' needs.

Fig. 19 represents the so-called Boston chair as devised by Dr. F. J. Cotton, with an ordinary adjustable desk. For position of child at desk, see Fig. No. 8. This chair is used almost wholly in the Boston schools, but for various reasons previously mentioned has not been installed to any great extent elsewhere. It is by all odds the best chair on the market to-day for all school needs.



FIGURE 19

Fig. 20 represents a good desk and chair except for one thing. The chair back could easily be modified in two ways to make it an admirable

outfit: First, the back should be cut down to make it lower; and, secondly, the middle or lower cross bar should be curved forward instead of backward and adjustable in a vertical direction. The outfit then would offer a good practical desk and chair with few, if any, harmful points and many good ones about it. It need not necessarily be made of steel, which is noisy; but steel affords durability and reasonable cleanliness, both of which are desirable. The uprights of the back are wide, leaving ample room for clothes and buttocks; the seat is good; and with the minor changes in the back, it would be a good chair.



FIGURE 20

This about covers the ground of school seating to-day in the larger American cities of which I have had information. That similar conditions exist in other like communities from which I have not heard is to be supposed. To say that conditions are ideal would be wrong; but apparently School Departments are alive to the needs of the pupils, but so far are dependent on the School Furniture Companies for their supplies. That these supplies are not yet perfect must be admitted, but time, study, and experience will tend to the working out of better models than are now in use. Provided the expense of the installation is not prohibitive, School Departments generally take the bid of the lowest bidder, provided the patterns of the furniture are about alike. The chair shown in Fig. 20 with a few simple changes would be most satisfactory, and the changes would involve no additional expense to the manufacturer. Desks and chairs adjustable in all directions are not necessary, involve considerable care, and are used only to advantage in schools for cripples.

Conclusions

1. All chairs and desks should be adjustable to height.
2. Chairs and desks adjustable in other directions are not necessary.
3. A slight plus distance of about one inch is a good standard to go by in the relation of the desk to the chair seat.
4. The desk top should slope 12 to 15 degrees, and should be wide enough to allow the whole arm to rest on it in writing.
5. The chair seat should be flat with rounded corners and edges; or slightly concave to fit the buttocks.
6. The chair back should be wide with but two outside uprights, no higher than the lower part of the shoulder blades, with an adjustable cross bar convex forward and concave from side to side to fit the lumbar curve.
7. From a sanitary point of view, single standard desks and chairs are good provided the other qualifications are not lacking.
8. Benches, chairs of the kitchen-backed type, movable chairs, and settee chairs, are distinctly bad.
9. Physical Education Departments are essential in connection with all school departments.
10. Pupils should have frequent rest and exercise periods.

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FIG. 5.—Showing unnecessary support above the hollow of the back; contributes to slouching.

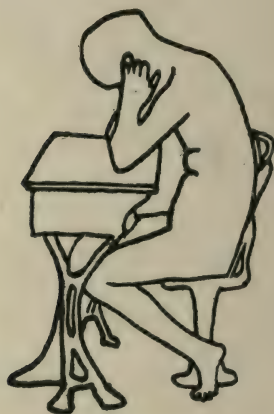


FIG. 6.—Showing a chair and desk too small for a large child, which condition allows nothing but a bad posture.

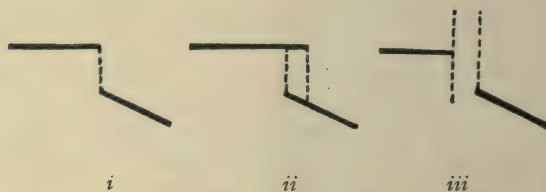
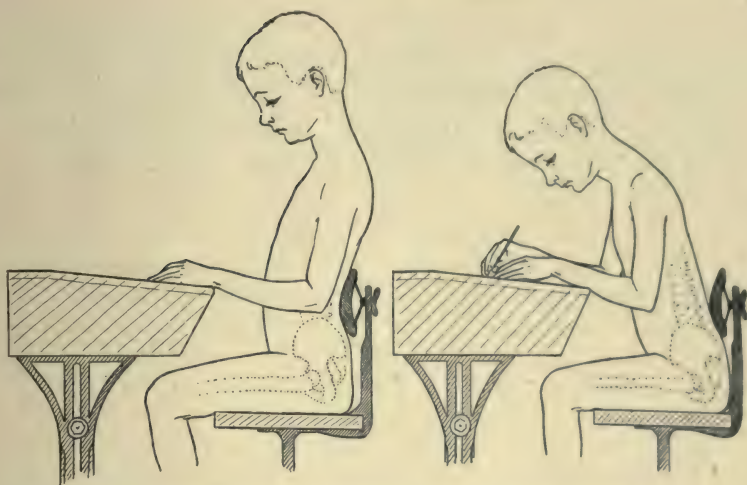


FIG. 7—Showing arrangement of seat to desk; *i*, plus distance; *ii*, minus distance; *iii*, zero distance.



[FIG. 8—Boston School House Commission desk and chair, devised by Dr. F. J. Cotton. See *Report*, 1903-1904. (See Fig. 19.)



FIG. 9.—Miss Emma G. Sebring's school chair with adjustable lumbar support, favoring correct posture.

TWO IMPORTANT POINTS IN CORRECTION OF EX- AGGERATED ANTERO-POSTERIOR CURVES OF THE SPINE AND ACQUIRED GENU VALGUS USED IN THE PHYSICAL TRAINING OF CHILDREN

BY

NATHALIE K. MANKELL

Taking for granted that others will give reasons and fully discuss why a good posture and weight bearing with least strain and economy of force is most essential for a child's physical education, I wish to describe a method for correction of exaggerated antero-posterior curves that I believe is not generally used.



FIGURE 1



FIGURE 2

The most commonly found poor posture in weak or untrained children is that with exaggerated dorsal and lumbar curves, shoulder blades protruding, head more or less forwards, and weight sometimes, but not always, on the heels.

A large mirror in which the child can see himself aids materially, as it adds the sense of sight to the muscle sense. Tracing the outline of the body on a large blackboard helps to impress the child, as does also the taking of photographs of the habitual posture.

The manual method for correcting this form of faulty posture is, in my experience, by far the quickest. The instructor should place one hand on the lower part of the pelvis posteriorly, the other on the upper part of the abdomen. Often, too, the instructor may at the same time exert pressure on the shoulder blades, by placing the side of the head against the child's shoulders; thus pressure is made at the height of each curve. This maneuver straightens the lumbar curve principally. At first, in most cases, complete correction of general posture is not to be too urgently insisted upon. If the patient can be made to relax this primary correction may be quickly taught and requires very little muscular effort to acquire, and to maintain. At first the chest may be allowed to remain low, the head too much forward, and the weight too far backward. I have had quicker results in the end by beginning thus with the straightening of the lumbar curve. This correction may be acquired at once or at least in a few lessons.

Once this is taught, the child may be made to shift the weight-bearing to the middle part of the foot, when necessary; then comes the lifting of the chest which often causes the shoulder-blades to fall naturally in place flat and backwards, without undue effort. Finally the head is to be held high with chin neither too far forward nor drawn too close.

Many corrective exercises and manipulations may be needed to accomplish complete results. Attention to general health is of course important.

In school and in general practice I have had far quicker results in teaching posture by beginning thus at the lumbar curve instead of with the chest, as is usually done. The so-called "stand tall" position is, as a rule, more tense, and therefore does not make as good a fundamental position for other exercises.

Never have I seen obliteration of the lumbar curve result from the method which I have described. Of course it should not be used when a child already has a tendency to obliteration of the lumbar curve.

No one can long maintain really good posture or have endurance without the correct relation of the trunk to the lower extremities.

Here, again, I only wish to discuss one small, but important point from a gymnastic point of view.

Many a child has acquired the habit of standing with knees together and heels from one to four inches apart. The cause is probably in most cases weak foot, most often pronation. To correct the pronation by mechanical devices and walking with the foot straight forwards generally helps, but is not always necessary.



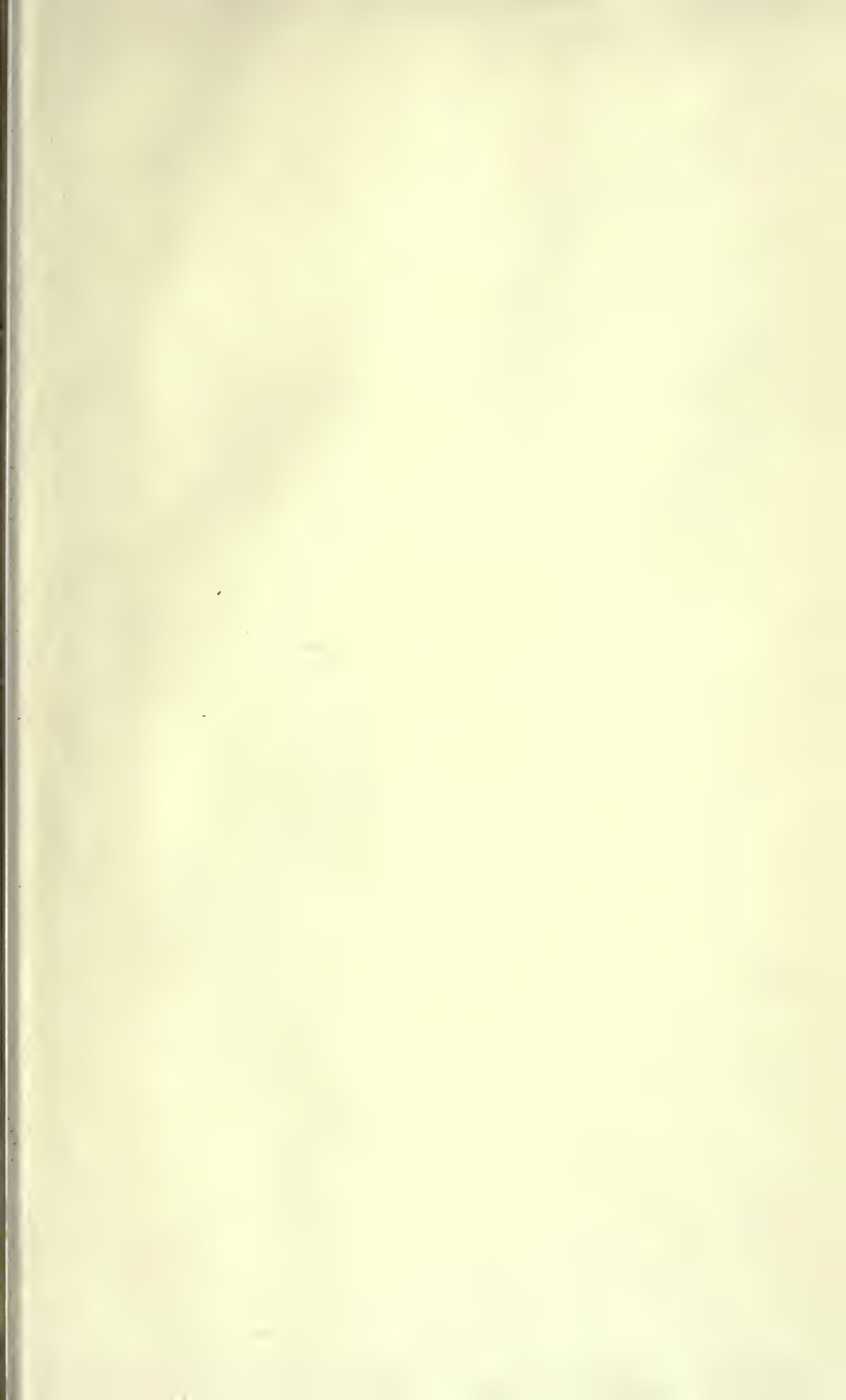
FIGURE 3

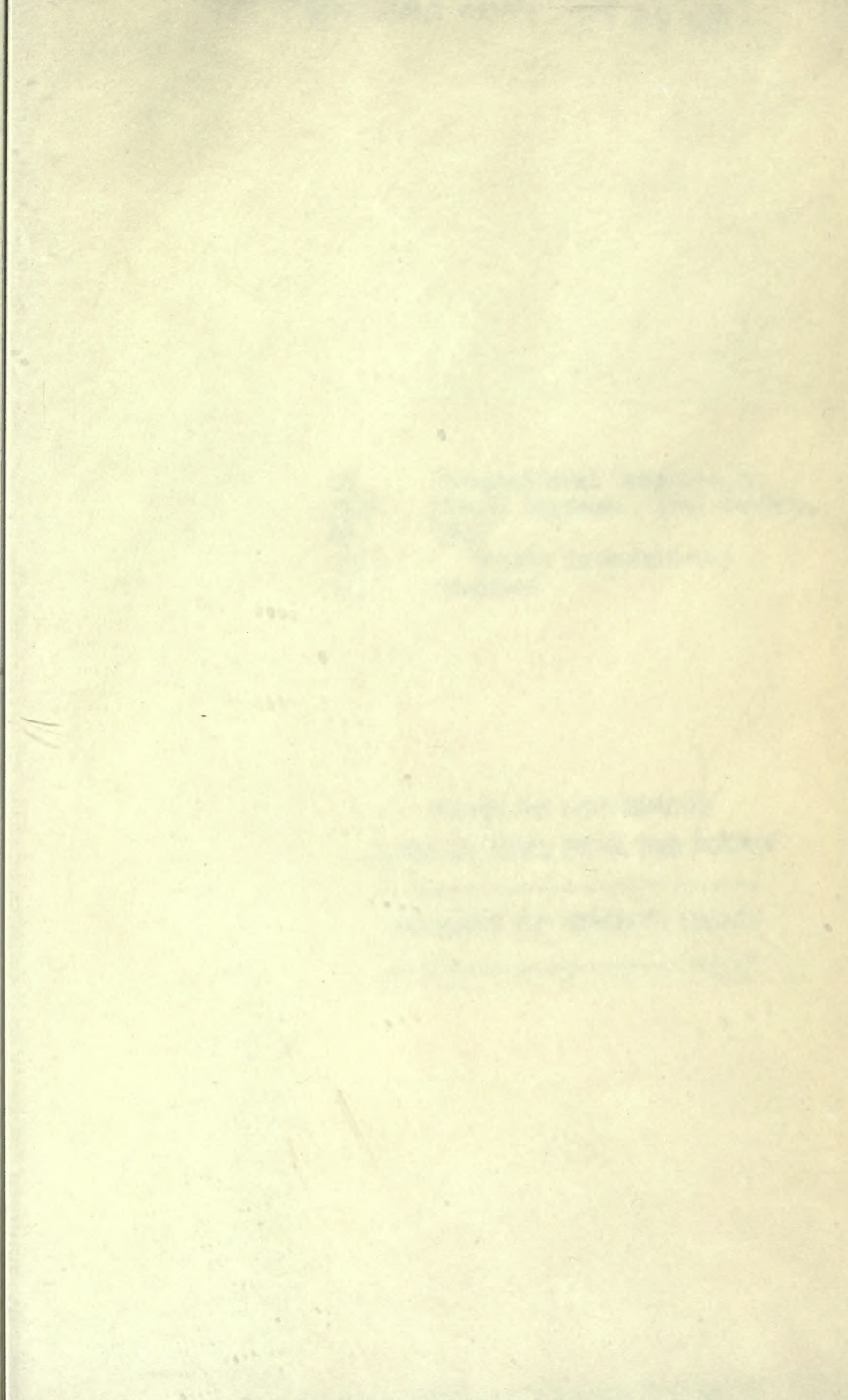


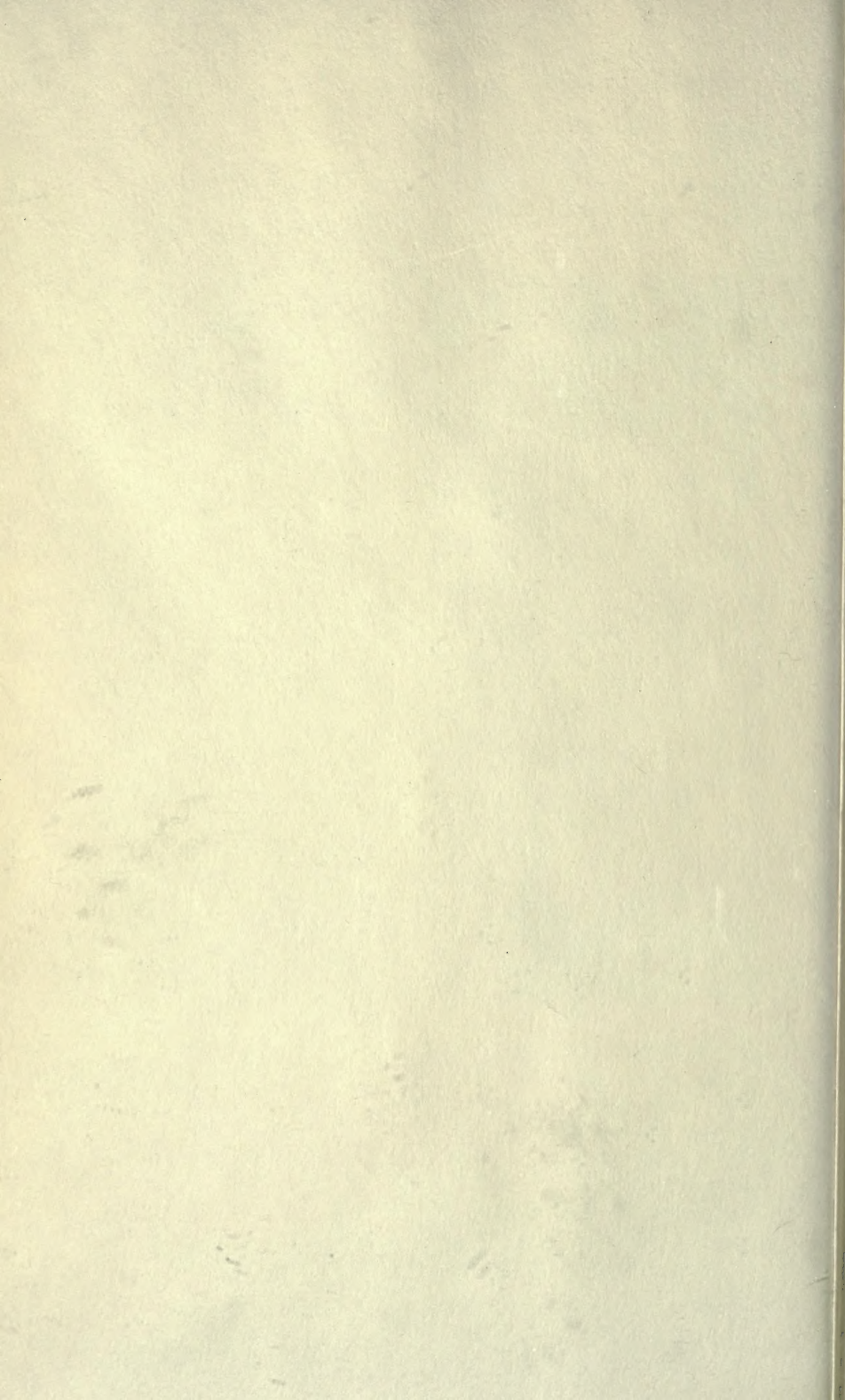
FIGURE 4

Let the child bring the feet as close together as possible without overlapping of the knees. That makes him stand more on the outside of his foot. Make him repeatedly try to keep the knees apart, while the feet are brought closer. Making him walk with the feet pointing straight forward as close together as possible has given me unexpectedly quick results in overcoming acquired knock-knee. The usual exercises for pronated or weak feet are naturally very valuable in conjunction.

Of course when the feet are stronger and legs straighter it makes small difference if the child stands with the feet on a broader basis.







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